SCHWING Stetter

MC400

User Manual

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Foreword

Dear Stetter Customer,

Thank you for choosing to buy the MC400 control system. In this manual, we have made every effort to bring together everything that is of importance with regard to using the program. The manual is intended to give you practical help with very many details. At the same time we have tried not to allow the scope to become too great. These are two conflicting criteria and we hope that we have found a good compromise. If the description of certain points seems insufficient to you, or if you cannot find something quickly enough, we would be very grateful if you could let us know.

The manual is divided up into different chapters. These chapters mainly refer to the corresponding function groups of the MC400.

In the introduction you will find all the legal material and all copyright notices. This is important, but is not intended to put you off reading further.

All control elements of the program that are common to all program points are described in the “General“ section. In addition, this is where the functionality's and a list of all program properties are outlined.

Parts of the program that are necessary for preparing production are explained in the chapter “Main window”. The chapter is very detailed because it contains most of the program parts. The many program parts are a result of the wide-ranging functions of MC400. However, a lot of data is changed only rarely. Operation should be as simple and as practical as possible for practical operation.

In the “Production” chapter you will learn everything necessary for starting production.

Another chapter deals with scheduling. This offers the graphic possibility of organising your production on time. You will see that it is very simple and yet at the same time still offers a lot of possibilities.

In the chapter “Configuration“ you can read about how the program is configured. A lot of the configuration data is prepared by Stetter GmbH and may require changing.

A separate chapter has been devoted to commissioning. Here you will find additional data from the chapter on configuration that is important for initial production.

The Appendix contains numerous additional tables.

We wish you every success in producing concrete with the MC400.

The MC400 team of developers

1 Introduction

These operating instructions contain information and instructions for operating a STETTER concrete mixing plant with the MC400 control system.

Operation may only be carried out by trained persons.

Observing these operating instructions is **the** pre-requisite for fault-free operation. The points emphasised with **ATTENTION** and NOTE must also be observed here.

To prevent faults and damage due to operating errors, it is first necessary to read these operating instructions carefully.

In order to achieve optimum familiarity with the program MC400, it is recommended to start the program on the computer and to work through the individual program parts in the order in which they appear in this manual.

There shall be no possibility of warranty claims in the event of incorrect handling that contravenes the instructions in this manual.

Operation of the concrete mixing plant itself is described in a separate set of operating instructions. The safety and accident prevention instructions outlined therein must **always** be observed. The accident prevention regulations must be obeyed.

Manufacturer's operating instructions are supplied with the individual devices such as computers, monitors and printers. These instructions must be followed for operating these devices.

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We have examined the contents of this documentation to ensure that it corresponds with the software. However, the possibility of deviations cannot be excluded, which means that we cannot provide any guarantee of complete correspondence. The information in this manual is examined regularly. Any necessary corrections are incorporated into subsequent print runs. We would be grateful to receive any suggestions for improvements.

The warranty shall be void if any software is installed that has not been checked and approved in writing by Stetter GmbH.

Residual risk

In modern software development it is no longer possible to check every program code of the software components used. We have no influence over various software components such as Windows XP®. It goes without saying that all conceivable tests are conducted.

We cannot accept any liability for program errors contained in purchased software packages. However, in the event of an error, we will attempt to change our program so that these errors do not arise.

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6 Overview

The increasingly complex demands being placed on a metering and weighing system for concrete mixing plants are always challenging controller manufacturers. In this context it is not only the possibility of calibrating the weighing and issuing a delivery note in accordance with DIN EN 1045 that play a decisive role, but also ease of use, networking etc. Stetter meets these needs with the new generation of control system MC400. A simple and convenient graphic interface, networking of workstations, the use of a SQL database, automatic production planning and the control of several plants are its decisive features. MC400 represents a secure and future-orientated basis for new investments.

The new dosing and weighing system MC400 allows clear and user-friendly processing of concrete, mortar and self-transporting orders in conjunction with one or more mixing plants. A PC (Windows XP™) with a SQL database assumes responsibility here for order administration, scheduling and the management of all data relevant to production. The production sequence is controlled by a Siemens PLC.

An operator can monitor the mixing plants via a workstation and send production orders to them. Of course, several PC workstations can be networked via TCP/IP for processing a larger quantity of orders. Up to 4 monitors can be connected to one PC. For default 2 Monitors are installed.

So that several users can be authorised for the different work areas (e.g. order administration, delivery note processing etc.), MC400 is equipped with a freely configurable user group administration facility.

A modern SQL database assumes responsibility for administration of the data stock, which is limited only by the size of the hard disk.

A fully-developed user interface increases clarity. The function keys have the most important control functions for production. The lists of records are arranged above the input dialog. The data of a selected record appears immediately in the fields of the input dialog, thereby eliminating tiresome opening and closing of dialogs. The data can also be changed directly in the lists. The system can be adapted to suit individual requirements by a free arrangement of the columns in the lists.

The MC400 has a clever search function so that there is no need for the various input fields for different search terms.

The sorting order of the lists can be individually adapted. To do this, simply click on the column headings with the mouse and move them.

Automatic delivery planning ensures much simpler scheduling of the concrete and mortar orders. As soon as all the necessary data has been saved for creating a new order, the deliveries are calculated. This is done on the basis of the available trucks, the trucks preferred for a particular job site, the travel times, the unloading times and the plant utilisation rate. Of course, the suggested plan can be adapted to suit the actual situation.

A production logbook is compiled for every day. All results that occur during production are entered in it. The production logbook can be printed out in full or together with the produced batches. This means that it is possible to follow every production run at all times.

Optionally, it is possible to connect graphic scheduling with a truck utilisation rate and a plant utilisation rate. This gives clear information about the available capacities. It becomes immediately clear whether the capacity of the plant or of the truck pool is sufficient. Simply moving a displayed delivery from one truck to another or to a different plant is sufficient.

Additional software modules like MC400-MAP and MC400-Faktura are available.

MC400-MAP is a fleet management module which fits smoothly to the dispatching system. Via GPS and GSM it enables the locating of the trucks and monitors the actual status. The trucks are displayed within a map on the screen. For MC400-MAP there is a separate manual available.

MC400-Faktura is an invoicing system which is also fully integrated into the MC400 package. It manages different price lists, client and job site dependent discount prices, pumping prices and much more. The data of the production and the deliveries are available as soon as possible to enable the invoicing. Additional features are the credit limit monitor and the cash paying invoice. There is a separate manual available for MC400-Faktura.

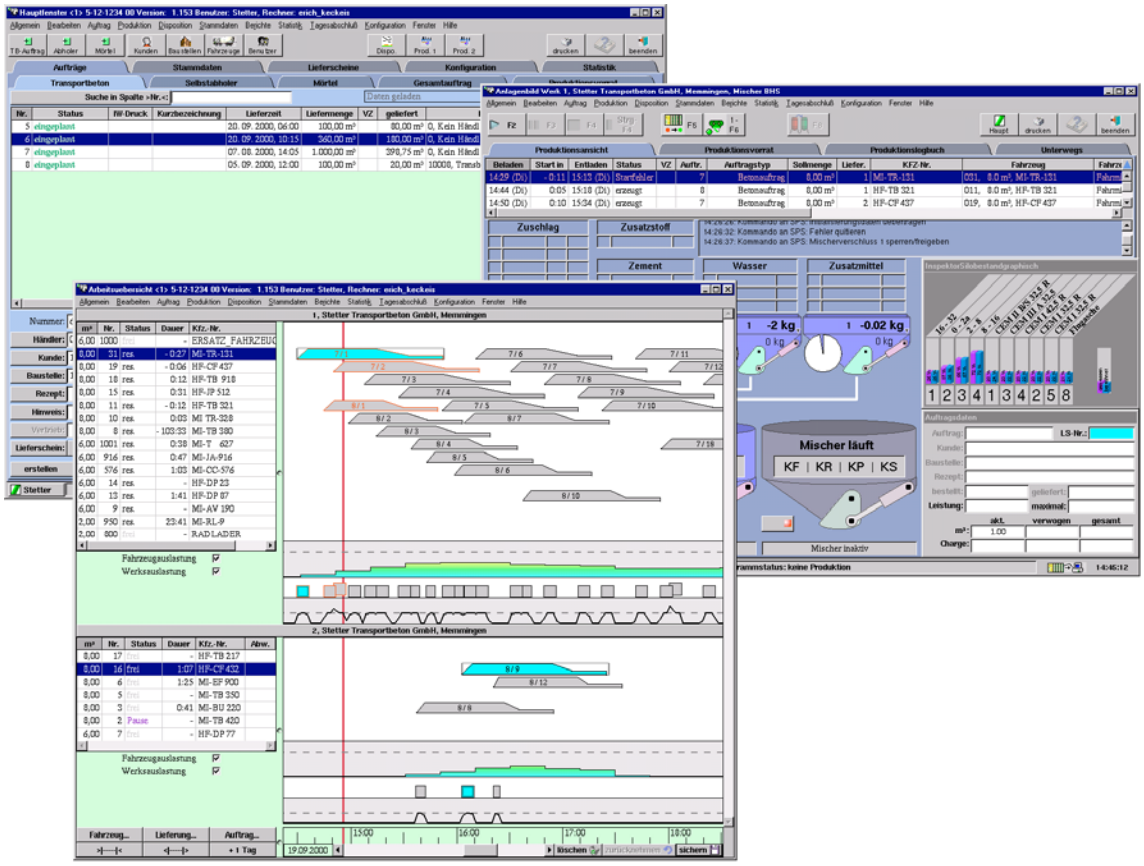


Figure 6-1: Overview

6.1 Properties

The following tables give an overview of the properties of MC400.

Dosing program

- ✓ Production logbook (list of all messages during production)
- ✓ Automatic determination and calculation of the amount of solid material in the recycling water and making allowance for it during production

  optional: with automatic density measurement of the used water
- ✓ Automatic switchover in the case of multiple-range weighers
- ✓ Automatic silo switching
- ✓ Automatic weigher checking
- ✓ Automatic water dosing
- ✓ Self learning in-air compensation
- ✓ Batch optimisation
- ✓ Direct monitoring of all drive units
- ✓ Moisture measurement for 6 components with sand / water correction (requires one moisture probe per component)
- ✓ Air drain of additive pipes
- ✓ Tolerance pre-setting in % of the required quantity
- ✓ Water reduction in the admixture
- ✓ Water pre-dosing
- ✓ Consistency/slump display (optional)
- ✓ Delivery note printing in accordance with DIN EN 1045
- ✓ Parallel production of two orders with different mix designs on plants with 2 installed mixers

Different plant types are supported as standard:

Plant with elevator

with conveyor belt

with weighing belt

with weighing belt and pre-silo

with one or two mixers

Tower plant

etc.

Order processing

- ✓ Freely selectable sorting sequence for the orders
- ✓ Display of the total production for the current day
- ✓ Definition of the delivery note printing
- ✓ Recipe adjustment, order-related and delivery-related (more cement, admixture and water)
- ✓ Definition of the input limits for order-related and delivery-related changes to the recipe (dependent on the user)
- ✓ Compiling mortar orders and delivery notes
- ✓ Combining several mortar orders into one production order
- ✓ Loading list calculation
- ✓ Double printing of delivery notes
- ✓ Pre-printing of delivery notes

Recipe administration

- ✓ General information on the recipe
- ✓ Recipe families
- ✓ Details of the cube production (recipe-related)
- ✓ Freely selectable dosing sequence for aggregate, cement, admixture and water
- ✓ Volume calculation, calculation of aggregate amount depending on selected grading curve
- ✓ plant dependent mix designs

Base data administration

- ✓ Entering dealers, customers, job sites, sales data, trucks, transport subcontractors, drivers, texts, plant data etc.
- ✓ Assignment of customers to dealers
- ✓ Assignment of job sites to customers
- ✓ Assignment of customers to distributors
- ✓ Displaying the last delivery for dealers, customers and job sites
- ✓ Deleting dealers, customers and job sites after the date of the last delivery
- ✓ Embargo texts as a warning or as an embargo for dealers, customers, job sites and recipes with password check
- ✓ Notice texts for customers, job sites, trucks and drivers. These texts are displayed at the start of production
- ✓ Definition of different driving times from the plants to the job sites (the driving times are taken into account in the delivery planning)
- ✓ Definition of time of day-dependent traffic density times (the traffic density times influence the driving times)

Material administration

- ✓ Entering material designation and article number
- ✓ Entering grade curve data for the aggregates for calculating the recipe
- ✓ Defining the silo assignment
- ✓ Silos, stating the alternate silo
- ✓ Coarse / fine switchover point
- ✓ Manual moisture pre-setting for the aggregates
- ✓ Tolerance pre-setting
- ✓ Supplier administration
- ✓ Automatic calculation of the quantity of retarder over the retarding time

Texts

- ✓ Details of quantity unit, price and billing number for special services
- ✓ Entering special services, concrete properties, advertising texts, notes, embargo texts

Data stock

- ✓ Log file for tracing user entries
- ✓ Saving all data on diskette, on a network computer or on a CD (a CD-ROM writer is installed)
- ✓ Possibility of printing all data stored in the system
- ✓ Freely selection of the data to be printed
- ✓ Free arrangement of the columns in overview lists
- ✓ Automatic width adjustment of the columns in overview lists
- ✓ Every column can be defined as a sorting criterion
- ✓ Change time and name of the user is stored for each record

System data

- ✓ User and group administration with password issuing. As many user groups as required can be created.
- ✓ Setting of plant-specific data
- ✓ Freely selectable names for the weighers, material types, truck types etc.

User administration

- ✓ Any number of user groups
- ✓ Any number of users
- ✓ Issuing field level permissions

Statistics

- ✓ All production data (delivery notes, batch data, production logbook etc.) is preserved until it is deleted by an authorised operator. This means that all statistical data can be interrogated over any period.
- ✓ Production statistics stating the average plant performance
- ✓ Dealer, customer, truck, recipe and sales data statistics, listing the deliveries
- ✓ Statistical data for the day, week, month, year or any time period
- ✓ Number of tours per truck referred to a time period
- ✓ Average load quantity per truck in m^3 illustrated graphically
- ✓ Material inventory management
- ✓ Required / actual consumption with calculation of the deviation in % and tonnes
- ✓ Material consumption over any time periods
- ✓ Material consumption via manual operation
- ✓ Delivered quantities referred to a time period for dealers, customers, job site, trucks, transport subcontractors, sales data and recipes etc. with optional list of the delivery notes

Export / delivery data

- ✓ Changes to the delivery note data can be understood (issuing of version numbers with every change)
- ✓ Delivery notes stored on diskette
- ✓ Delivery note reprinting
- ✓ Creation of computer files on a daily basis
- ✓ Creation of computer files per delivery note with any delivery note selection

  (a separate file is created for every selected delivery note)
- ✓ Creation of computer files per delivery note immediately after production
- ✓ ***optional***: Cash payment printout

Daily final work

- ✓ Selection of the required reports (lists, statistics etc.) The available reports are selected and printed out with a command. At the same time, the selection is saved as a schematic. Any desired number of schematics is possible.

Scheduling (optional)

- ✓ Graphic representation of the deliveries for one or all concrete plants involved
- ✓ Free planning via simple moving of the deliveries with the mouse. A delivery can be easily assigned to a truck in the same plant or in another plant.
- ✓ Plant utilisation rate
- ✓ Truck utilisation rate
- ✓ Display of the time remaining until the necessary production start.
- ✓ ***optional***: Radio status connection

  Automatic updating of the driving times to the job sites when status messages arrive

  The status of the trucks is updated manually (with the mouse) or via a radio status message.

7 Menu structure

7.1 Menu point - General

General	Key abbreviation	Description
Change user		A log-in window is opened. The user name is selected in this log-in window. After the password has been entered and confirmed, the user is changed. All permissions are also allocated with the user change.
Options...		An options dialog for changing different pre-settings. - Path details - Colours - Date and currency format - Printer
Copy database (saving)...		The complete database is copied to a defined directory. The directory is pre-set in the options. Before copying starts, a directory dialog appears from which it is possible to select a different target directory.
Restore database from backup....		An older database can be copied back. The user is first asked to save the current database. **ATTENTION:** The existing database is completely replaced by the older one.
Export delivery note data....		A dialog appears for exporting the delivery note data. The export format can be found in the appendix.
Export data....		Different data is exported. The export format can be found in the appendix.
Import data....		Different data is imported. The import format can be found in the appendix.
Exit	CTRL key + Q	The program is ended. A prompt to save the data appears if the data has been changed.

7.2 Menu point - Edit

Edit	Key abbreviation	Description
new	Ins key	A new record is created depending on the selected tab.
copy record	CTRL key + K	The marked records are copied.
delete selected rows...	CTRL key + L	The marked records are deleted.
search	CTRL key + F	The contents of the search field are marked. A new search text can be entered. Start the search with the ENTER key.
undo	CTRL key + Z	The last change is undone if this is possible.
cut	CTRL key + X	A marked text is copied to the clipboard and deleted.
copy	CTRL key + C	A marked text is copied to the clipboard.
paste	CTRL key + V	A text previously copied to the clipboard is inserted in the cursor position if this is possible.
select all	CTRL key + A	Mark all displayed records in a list. This must be prepared with a mouse click in the list.
save	CTRL key + S	(= ***Save*** **key**) Save changes
print	CTRL key + P	(= ***Print*** **key**) An assistant for printing is started.
update display	CTRL key + F5	Synchronisation of the displayed records with the database.

7.3 Menu point - Order

Order		Key abbreviation	Description
new...	orders for ready mix		The program changes to the ready mix concrete orders. A new empty record is created.
	orders for self transporting		The program changes to the self-transporting orders. A new empty record is created.
	orders for mortar		The program changes to the mortar orders. A new empty record is created.
orders for ready mix			The program changes to the ready mix orders.
orders for self transporting			The program changes to the self-transporting orders.
orders for mortar			The program changes to the mortar orders..

7.4 Menu point - Production

Production	Key abbreviation	Description
Scheduled productions	Shift key + F10	There is a change to the production window and the tab with the scheduled productions is selected.
set-up mode		control systems based on S7-PLC only – opens a dialog to get different runtimes of the plant (flap opening times, skip runtimes) This item is available in the production window only
Plant schematic	F10	There is a change to a production window and the tab with the system representation is selected.
Delivery notes	CTRL key + F10	Change to editing the delivery notes
Production logbook	CTRL key + Shift key + F10	There is a change to the production window and the tab with the production logbook is selected.

7.5 Menu point - Base data

Base data	Sub-menu	Key abbreviation	Description
Dealers		CTRL key + Shift key + H	Change to dealer list
Customers		CTRL key + Shift key + K	Change to list of customers
Job sites		CTRL key + Shift key + B	Change to list of customers / job sites
Trucks		CTRL key + Shift key + F	Change to list of trucks
Drivers		CTRL key + Shift key + A	Change to driver
Transport subcontractor		CTRL key + Shift key + S	Change to transport subcontractor
Distributors		CTRL key + Shift key + V	Change to list of distributors
Recipe data	Description	CTRL key + Shift key + R	Change to recipe list – description
	Recipe		Change to recipe list – recipe
	Recipe mixing data		Change to recipe list – mixing data
	Characteristics of concrete		Change to the characteristics of concrete. The characteristics of concrete are assigned to the recipes when the recipe is edited.
	Grade curves		Change to recipe list – grade curves
Materials			Change to list of materials
Material-access		CTRL key + Shift key + M	Change to material access
Texts	Characteristics of concrete		Change to the characteristics of concrete. The characteristics of concrete are assigned to the recipes when the recipe is edited.
	Special services		Change to the special services
	Notes		Change to the notes
	Hint for recipe test		Change to the hint for recipe tests The hints for recipe tests are texts that appear as a message when the defined quantity of a recipe for testing has been reached.

Base data	Sub-menu	Key abbreviation	Description
	Types of unloading		Change to the types of unloading Types of unloading include an unloading speed that is necessary for calculating the deliveries. The types of unloading are assigned to the job sites.
	Types of building		Change to the types of building. It is possible to select from this list at the job sites.
	Embargo texts		Change to the embargo texts. Embargo texts can be assigned to the dealers, the customers or the job sites. Embargo texts contain options for blocking or warning.
	Advertising texts		Advertising texts are texts that can be selected in a plant. The selected text is printed out on the delivery note if no weight values are printed out.

7.6 Menu point - Reports

Reports	Sub-report	Description
Dealers...		Start assistant for selecting a report on dealers
Customers...		Start assistant for selecting a report on customers
Job sites...		Start assistant for selecting a report on job sites
Trucks...		Start assistant for selecting a report on trucks
Drivers...		Start assistant for selecting a report on drivers
Transport subcontractors...		Start assistant for selecting a report on transport subcontractors
Distributors...		Start assistant for selecting a report on distributors
Recipes...		Start assistant for selecting a report on recipes
Texts	Characteristics of concrete...	Print (with preview) the characteristics of concrete texts
	Notes...	Print (with preview) the notes
	Types of unloading...	Print (with preview) the types of unloading
	Embargo texts...	Print (with preview) the embargo texts
	Special services...	Print (with preview) the special services
	Advertising texts...	Print (with preview) the advertising texts
Material data	List of materials	Print (with preview) the materials
	Stock of material...	Print (with preview) the stock of material
	Material consumption...	Print (with preview) the material consumption

7.7 Menu point - Statistics

The date range can be selected for all statistics.

Statistic	Details	Notes
Deliveries	List of the delivery notes...	The list of delivery notes is displayed / printed
	Deliveries with batches...	The delivery notes are displayed / printed with the batch details
	Deliveries with batches and logbook...	The delivery notes are displayed / printed with the batch details and the production logbook
Dealers	List with delivered quantities...	The dealers are displayed / printed with the delivered quantities.
	List with deliveries...	The list with the delivery notes is displayed / printed for each dealer
Customers	List with delivered quantities...	The customers are displayed / printed with the delivered quantities.
	List with deliveries...	A list with the delivery notes is displayed / printed for each customer.
	List with job sites and deliveries...	The job sites and for them the list with the delivery notes are displayed / printed for each customer
	List with delivered types...	The list with the delivered types of concrete is displayed / printed for each customer.
Job sites	List with delivered quantities...	The job sites are displayed / printed with the delivered quantities.
	List with deliveries...	The list with the delivery notes is displayed / printed for each job site.
	List with delivered types...	The job sites are displayed / printed with the delivered types of concrete.
Recipes...		The recipes are displayed / printed with the delivered quantities.
List of produced recipes...		The list of produced recipes is displayed / printed.
Stock of material...		The stock of material is displayed / printed.
Material consumption...		The material consumption is displayed / printed.
Trucks	List with delivered quantities...	The trucks are displayed / printed with the delivered quantities.
	List with deliveries...	The list with the delivery notes is displayed / printed for each truck.
	Statistics of touring...	The statistics of touring are displayed / printed.
Transport subcontractors	List with delivered quantities...	The transport subcontractors' trucks are displayed / printed with the delivered quantities.
	List with deliveries...	The list with the delivery notes is displayed / printed for each transport subcontractor's truck
Distributors	List with delivered quantities...	The distributors are displayed / printed with the delivered quantities.
	List with deliveries...	The list with the delivery notes is displayed / printed for each distributor.

7.8 Menu point - Daily final work

Daily final work	Description
Reports	Change to the reports (Statistics tab). Print profiles can be created here. A print profile contains a selection of reports (statistics reports) defined by the user and that can be printed.
Edit delivery notes	The delivery note data can be edited here. Several tabs are available: - Ready mix concrete - Self-transporting - Mortar - All delivery notes (delivery note for production of combined mortar orders made up of individual mortar orders)
Export delivery note data....	Change to export of delivery note data From the delivery note data it is possible to create files that can be read in and further processed by other programs (e.g.: billing programs).

7.9 Menu point - Configuration

Configuration	Sub-menu	Sub-menu	Note
Daily set-up data			The daily set-up data dialog is opened. Weather data, used water limits and the pre-assignments of the special services for new orders are entered in the daily set-up data.
Computers			Edit the computers entered in the database. Each of the computers entered here in a network combination on which the MC400 runs has access to the database.
Texts	System texts	Delivery note formats	The system texts are entered by Stetter GmbH and should not be changed. The delivery note format designates the type of delivery note that is assigned to an order.
		Synonyms	in preparation
		Test states	Designations for the concrete test states
		Parameter units	Units of the plant parameters
		Status texts	Designations of different status texts
	Type texts	Order types	Designations of the order types
		Batch types	For internal use only
		Truck types	Designations of the truck types
		Recipe types	Designations for the grouping of the recipes
		Set-up data groupings	Designations for the grouping of the set-up data (plant parameters)
		Material types	Designations for the grouping of the material data
		Traffic groupings	Designations for the grouping of the traffics
		Names of weighers	Names for the weigher types
Plants	Addresses		Plant addresses
	Mixers		Mixer details
	Silos		Silo data
	Weighers		Weigher data
	Plant parameters		Set parameters for production
	Configure plant parameters		Configure parameters for production
	Messages of production		List of the production error messages
Working times	Weekly working times		Change working times of the plants
	Holidays		Define holidays (allowance made in the delivery calculation)
	Traffic times		Times of various traffic densities that influence the driving times to the job sites (allowance is made in the delivery calculation)
Data permissions	User		Change user entries (assignment of the users to groups)

Configuration	Sub-menu	Sub-menu	Note
	Groups		Define user groups
	Permissions		Definition of the permissions for the user groups
	Program module		Definition of the permissions for individual program elements

7.10 Menu point - Window

Window	Key abbreviation	Description
Set-up schedule		Open a new set-up schedule
Main window		Open a new main window
Message window		For internal use only
Plant schematic window		Open the plant schematic window
Database check		Dialog for checking the database
Move to prev. pos.		
Minimize all	CTRL key + H	Minimize all windows
Main window		All opened program parts are listed as from here.

7.11 Menu point - Help

Help	Key abbreviation	Description
About MC400...		Information window about MC400
Help…	F1	The manual is displayed

7.12 Menu point - Info

Help	Key abbreviation	Description
calibration...		control systems based on S7-PLC only – opens a window for calibrating the weighers

8 General

MC400 is a program that was written for Windows XP™. The various screen elements are operated according to the normal rules for Windows programs. Exceptions to this rule are pointed out at the relevant places.

The computer is installed in the plant in such a way that the program MC400 automatically starts after logging on to Windows XP™.

8.1 Switching on and logging on

- The Windows XP™ operating system is started after the computer is switched on. This procedure takes about 20 to 30 seconds and ends with the dialog **Start log-on**.
- Simultaneously press the keys CTRL-ALT-DEL. The dialog field **Log-on information** is then displayed.
- Enter the user name **MC400** without a password. If the field ***User name*** contains another name, mark the entered name with the mouse and overwrite it.
- Windows XP™ then starts the the program MC400. This procedure takes about 20 seconds.
- While the program is starting, the log-on dialog of MC400 is displayed. Here, select your name and enter the password.

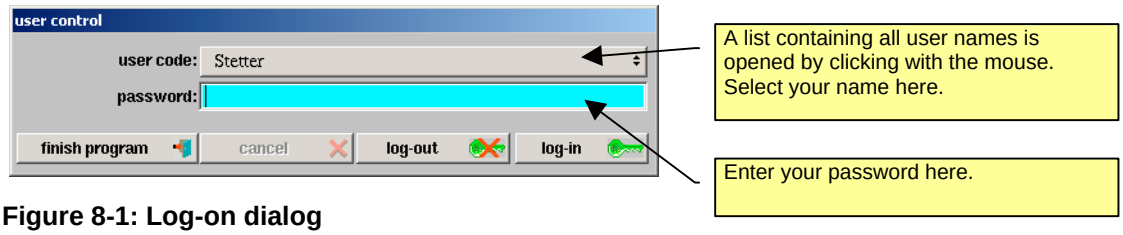
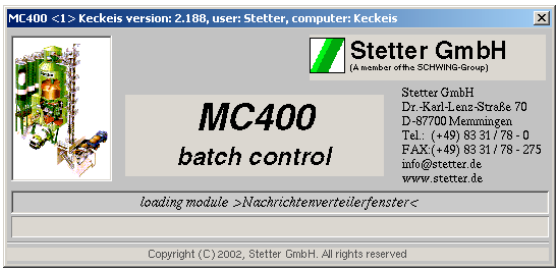


Figure 8-1: Log-on dialog

Entry of the password is confirmed with the ENTER key or via the “Log-in” switch. The program start is then continued.

When the start window disappears, the program is ready to use.



8.2 Daily set-up data

After all parts of the program have started, the dialog for setting the daily data is opened.

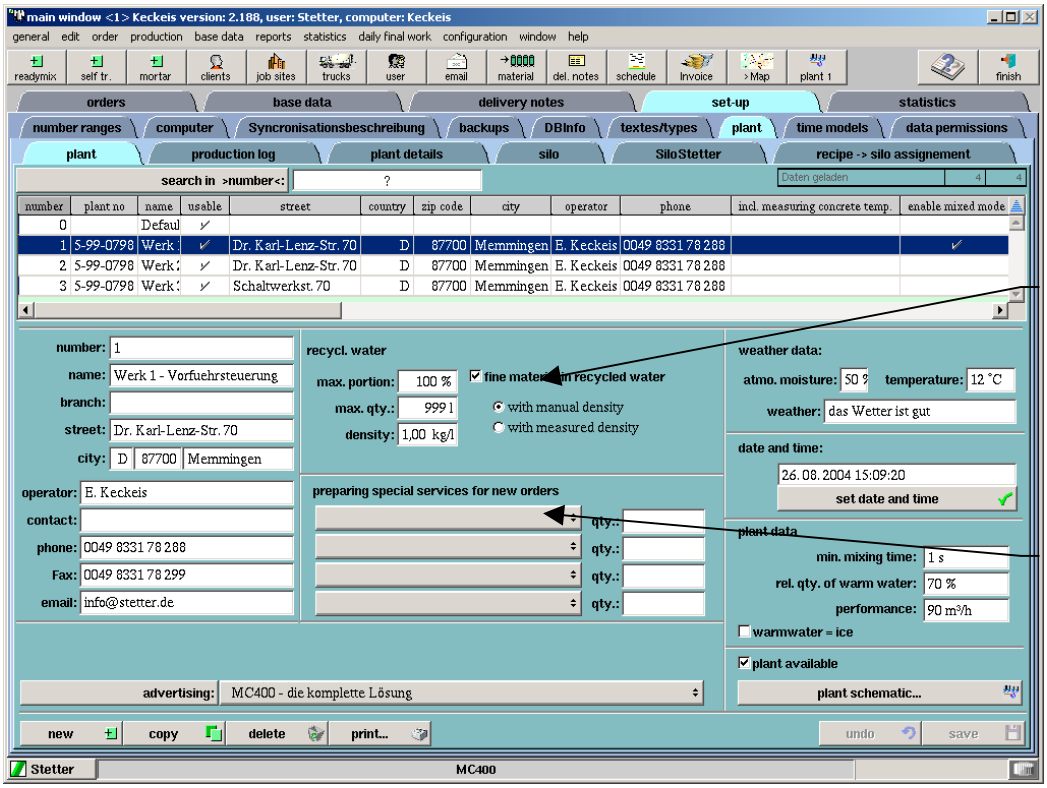


Figure 8-2: Plant and daily set-up data

weather data: This data is printed on the protocol

used water:

max. portion: Percentage amount of recycled water quantity allowed in the recipes.

max. qty.: maximum (absolute) quantity of recycled water per m³ of concrete

Both of these items are alternatives. The smaller of the entered items is used as the dosable quantity per m³. If you want to make the definition in %, enter 999 in the *max. qty.* field. by contrast, for limits to the absolute quantity, enter the value 100% in the *max. portion* field.

density: Density of the recycled water

fine material in recycled water: Activation of the fine material in recycled water function. If this field is activated, you can select whether the defined density of the recycled water is to be used or – if present – whether the density is to be measured automatically.

min. mixing time: The system compares this time and the mixing time given in the recipes. The highest value is used.

rel. qty. of warm water: Percentage amount of all the water

date and time: Changes must be confirmed with the set date and time button. The dialog is then closed automatically.

Special services: You can define up to 4 special services with the selection button. These are entered for each new order. The stated quantity is optional and depends on the special service.

8.3 Program parts

The program consists of 3 program parts

- Main program
- Plant schematic
- Set-up schedule (scheduling)

8.3.1 Main program

The data in the database is updated with the aid of the main program. This covers

- configuration of the program
- updating the base data (customers, recipes etc.)
- order administration
- the evaluations (statistics)
- etc.

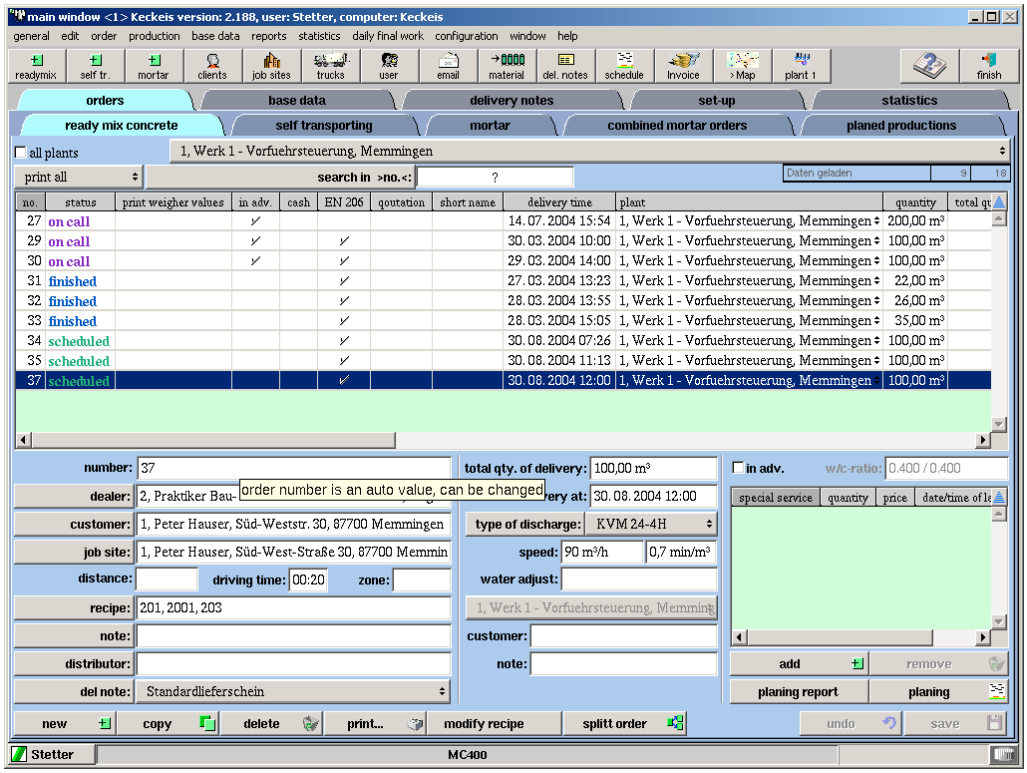


Figure 8-3: Main window

The plant schematic is started from the main program.

8.3.2 Plant schematic

A schematic representation of the production sequence is shown here. This covers:

- the schematic representation of the production sequence
- the list of productions due
- the production logbook
- deliveries that are being made

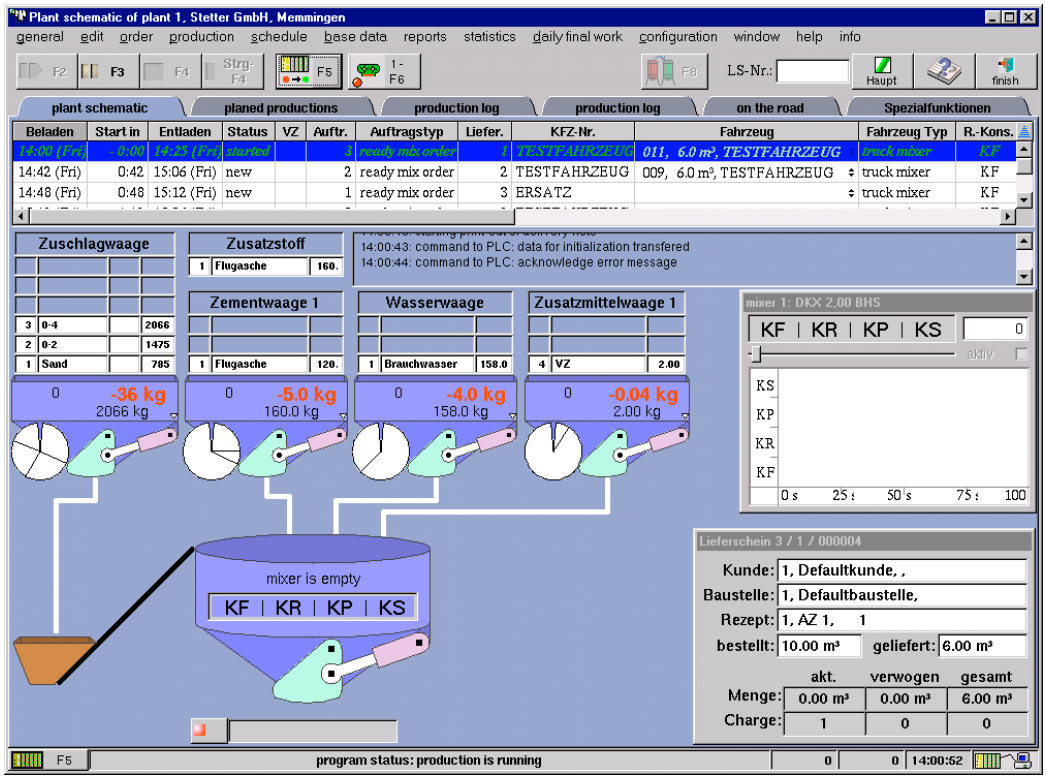


Figure 8-4: Plant schematic window

8.3.3 Plant utilization rate (optional)

The plant utilization rate (schedule) graphically illustrates the productions due (deliveries). Here it is possible to schedule in a very clear way. The plant utilization rate includes

- graphic representation of the due deliveries and their scheduling
- the plant utilization rate
- the truck utilization rate

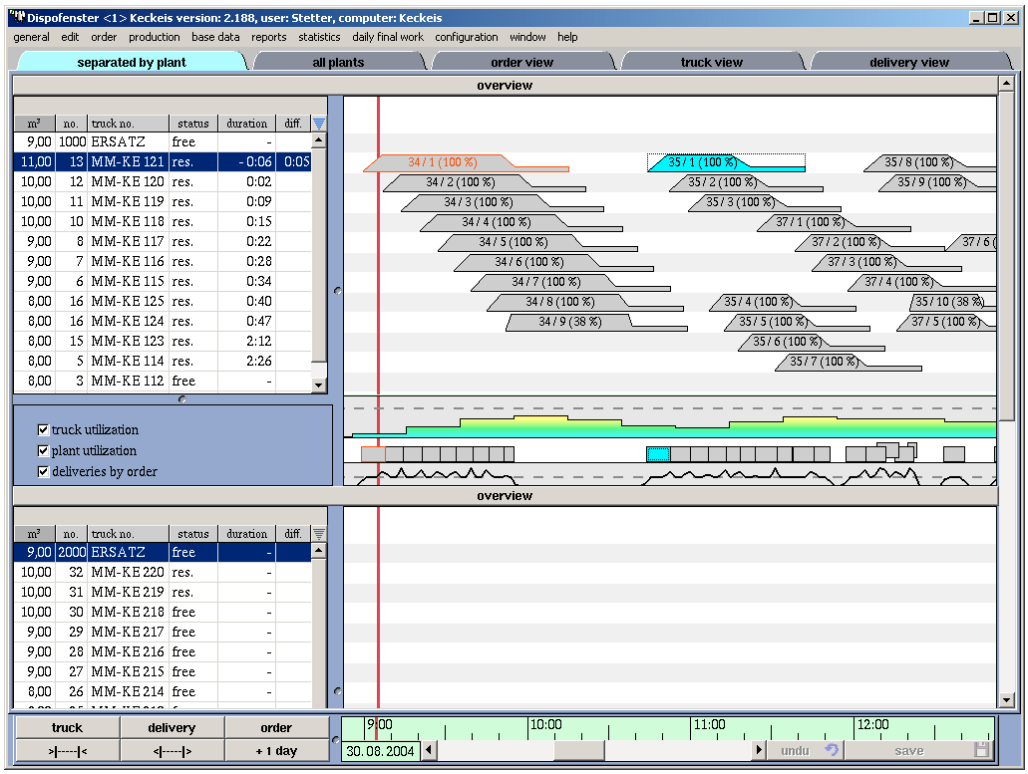


Figure 8-5: Set-up schedule (schedule)

8.4 Screen structure of the main window

The screen structure and the typical control elements will be explained using the example of the following screen.

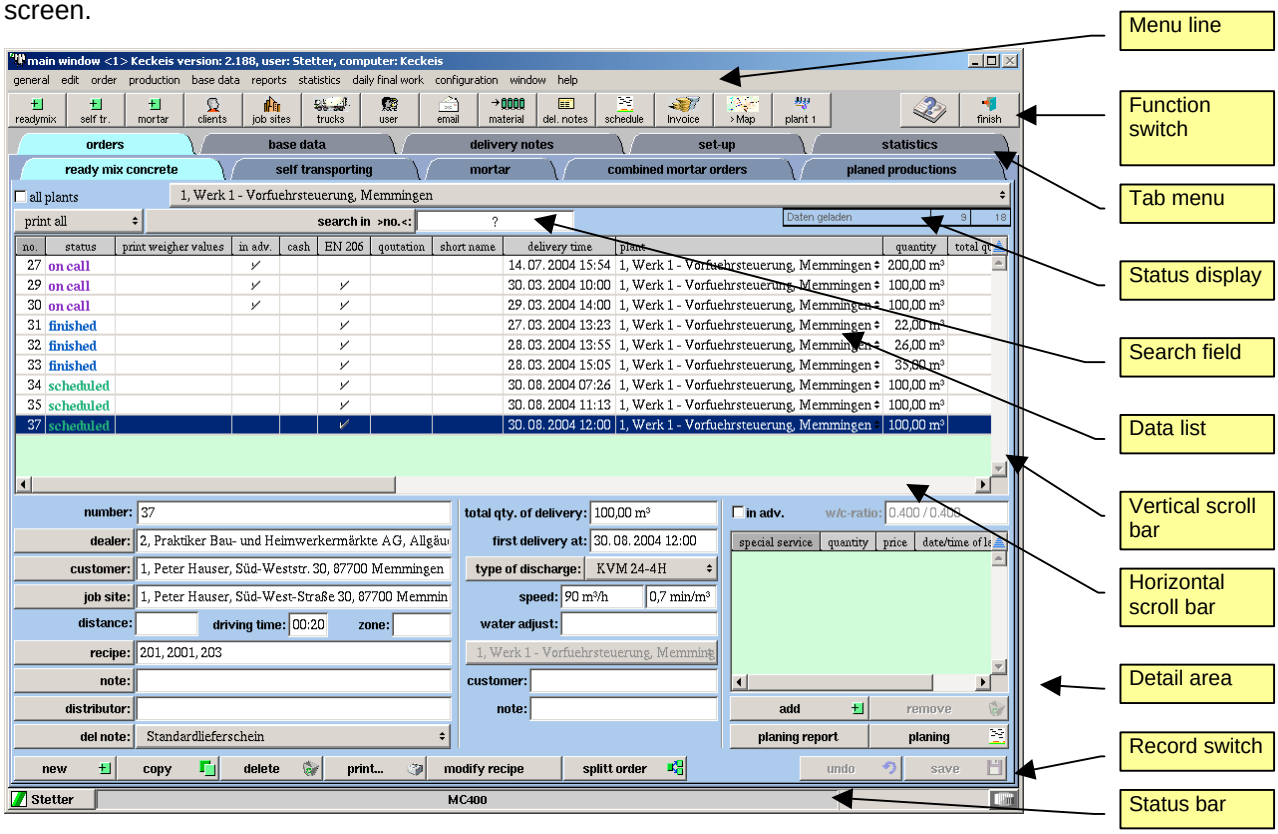


Figure 8-6: Screen structure – Main window

8.4.1 General

The program has short help texts throughout. These appear automatically next to the mouse pointer when the mouse remains unmoved. They provide information on the control element to which the mouse pointer is pointing.

8.4.2 Menu line

The menu line is the same for all program parts (main window, plant schematic window, set-up schedule etc.). Here, important functions are brought together in groups. Some menu entries contain details about quick access via the keyboard. Example: CTRL-S for saving (CTRL is equivalent to the <Ctrl> key)

8.4.3 Function button

The function buttons have important functions. For example, here you can change to the plant schematic window or the set-up schedule.

Short help texts next to the mouse pointer provide information about the stored functions.

8.4.4 Tab menu

The different data quantities are grouped in the tab menu. There are different sub-tabs, depending on the data group. Colour highlighting identifies the selected levels and make for an easier overview.

8.4.5 Search fields

In the search field it is possible to define search criteria for finding a record. The search is conducted in the marked column. To mark a column it is sufficient to click with the mouse on the column heading. This is then coloured dark grey. The displayed data is then sorted according to this column. If no column is marked, the sorting is performed according to the first column

Texts, numbers or dates can now be entered in the search field. Clicking with the mouse on the switch “Search in >...<“ or confirming with the <RETURN> key starts the search.

The following entries apply:

Field type	**Entry**	**Example**	**Special characteristics**
Number	Number or “?“	“7“ for customer number	
Text	Letter or “*“	“m“ for customer name	The data list is restricted with each entry.
Date	Date Date, time DD.MM.YY, SS:MM Day abbreviation	05.10.1999 05.10.99 05.10.1999, 10:20 mo, tu, we, th, fr, sa, su	

Table 8-1: Search criteria

8.4.6 Data list

The found records are listed in the data list. The first or marked column is the sorting criterion. However, any columns can be marked with the help of the mouse (click with the mouse on the column heading).

The arrangement of the columns can be adapted to meet individual requirements. The column heading of the required column is clicked on with the left mouse button (keep the mouse button pressed). The column can now be moved to the left or right. The arrangement is stored in the system so that it is available in the same way the next time the program is started.

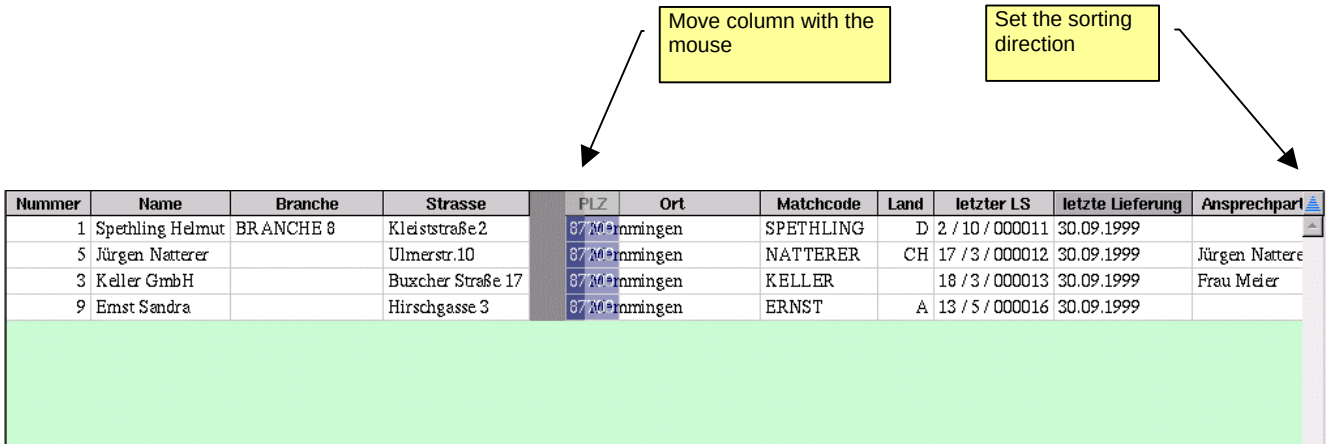


Figure 8-7: Arranging columns

8.4.6.1 Sorting sequence

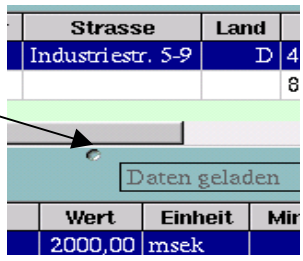
The records are sorted from left to right. The marked column takes precedence here.

8.4.6.2 Sorting direction

The sorting direction is defined with the sorting button  . Possible settings are ascending, descending and unsorted. The current setting is indicated by a short text next to the mouse pointer, if this is above the sorting button.

8.4.6.3 Separating several data lists

Sometimes, two or three tables can be seen in the main window. Between the tables, a dot can then be seen in the centre with which it is possible to move the vertical column area.



8.4.6.4 Data editing

The data of a record can either be changed via the input fields of the detail area or directly in the data list. A record is marked with the mouse. The detail area is filled with the corresponding data. Double clicking enables a field in the data list to be marked and overwritten.

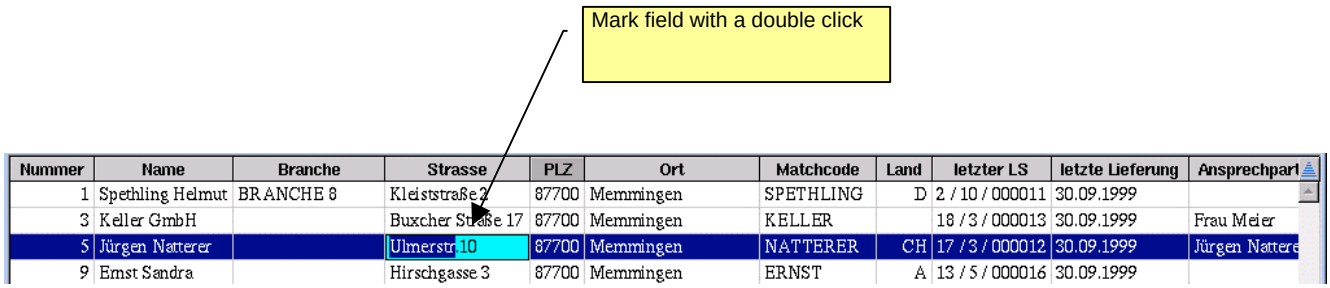


Figure 8-8: Marking a table field

Note: Various fields are blocked and cannot be changed.

However, after the entry is confirmed with the <RETURN> key, the field of the same column is automatically marked, but in the next line.

8.4.7 Data selection from pre-assigned lists (selection button)

In various dialogs, data for a record is selected from an existing data stock via a pop-up list. Such lists can be identified by a double arrow on the right edge of the button. For example, the special services for all newly created orders can be pre-assigned in the daily set-up data dialog.

For this purpose, a list of the existing special services is opened via a selection button. In the case of some data, it is not necessary to make a selection. In this case, the first entry in the list is blank.

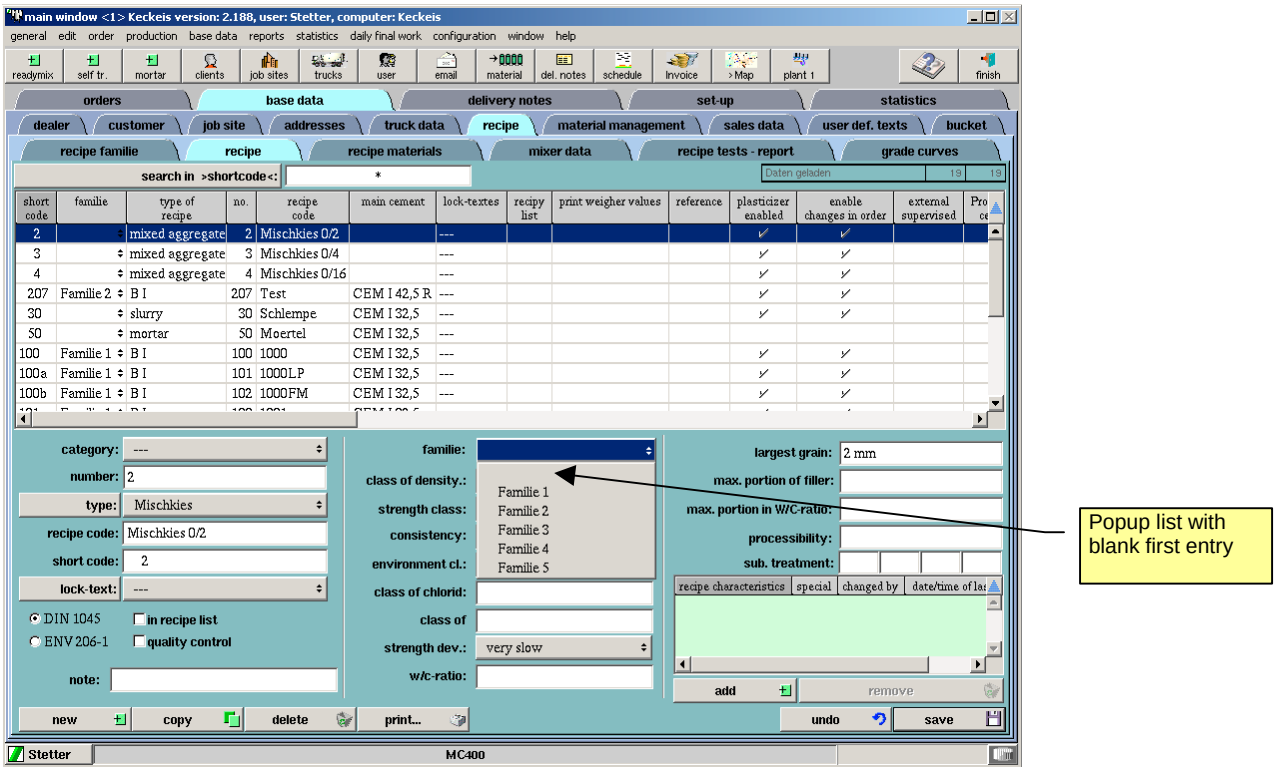


Figure 8-9: Example of a pop-up list

8.4.8 Detail area

Individual data items of a selected record are displayed in the fields of the detail area. They can be changed by selecting the field with a mouse click, provided that it can be selected. A marked field is identified by a turquoise background.

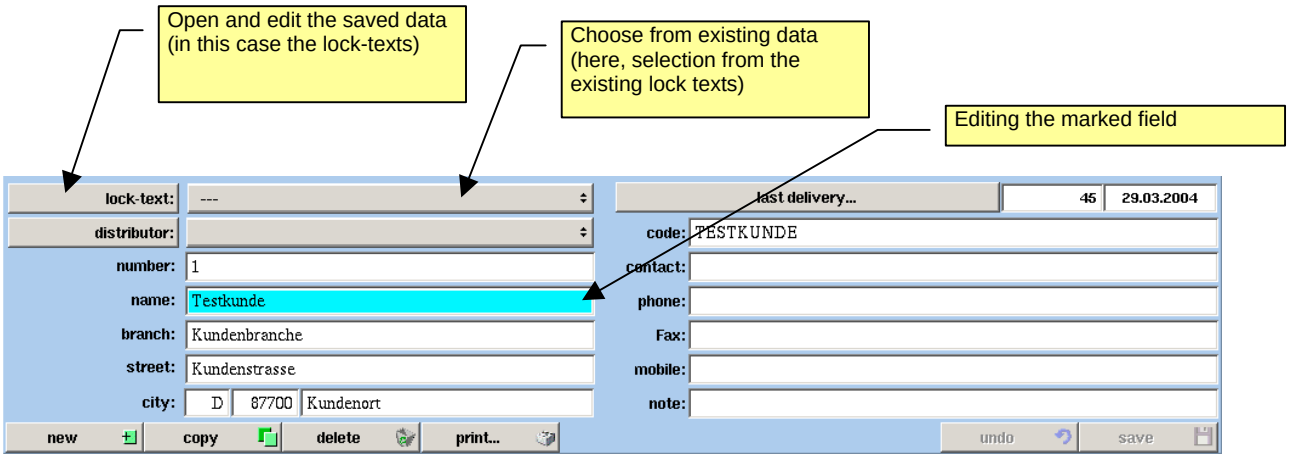


Figure 8-10: Marked input field

8.4.9 Record button

Records are compiled, copied, deleted etc. with the aid of the record button. Depending on the set user rights, these buttons are visible and can be operated. It has been ensured that equivalent buttons are always in the same position.

ATTENTION:

Changes to the data are not written to the database until they have been confirmed with the button "save". This function is called up automatically on an individual basis. This is the case, for example, with deleting.

8.5 Operation

8.5.1 Arrange columns

See 8.4.6.1 Sorting sequence *on Page 39*

8.5.2 Hide columns

Often there are more columns in the tab menu than can be displayed on the screen. So that you can see all columns, it is necessary to move the table with the horizontal scroll bar.

If you do not need all of the columns or if you want to have greater clarity, “unimportant” columns can be hidden. To do this it is necessary to mark the required column heading with a mouse click. With the right mouse button, a menu appears with the instruction “Remove column”.

8.5.3 Add columns

Hidden columns can be displayed again via a “column manager”. This is located on the bottom right edge of a table. If you click on this “column manager” with the mouse, the hidden columns can be selected.

8.5.4 New data

New records can be created with the “new” button. Input fields are then made available in the detail area of the main window. The new data must be saved with the “save” button.

8.5.5 Change data

Changes to saved data are made by clicking directly in the data list with the mouse. However, this is not possible in the case of blocked fields. The changed data must be saved with the “save” button.

8.5.6 Copy data

You can copy already created records. An advantage of this is that if only minor changes have to be made to an existing record, in order to create a new record.

8.5.7 Delete data

If you want to delete one or more records, these must first be selected with the mouse. They can then be deleted with the “delete” button. Before deleting a record, there is a check as to whether this record is being used for another purpose, e.g. customers assigned to an order cannot be deleted.

Several records can be selected in a data list. While the <Ctrl> button is pressed, the individual data items can be marked with the left mouse button or the marking can be cancelled again.

Tip 8-1: Select several records

8.5.8 Print data

Data can be printed out with the “Print” button. When you do this, the "Report Wizard“ is opened – a window in which other selection possibilities are offered. The printout or a preview can be selected there.

8.5.9 Search function

Particular terms in the columns can be searched for with the "Search" button and the input field next to it on the right. To do this, the required column heading must be marked with the left mouse button. The search text is then entered in the input field.

In the case of most columns, the search starts as soon as one letter or number is entered. Only if you want to search in a column with date or time information is it necessary to start the process with a mouse click on the Search button.

If the list is sorted on the basis of a numbers field and if no records appear, delete the entry in the search field and click on the Search button again..

Tip 8-2: No records when searching via numbers

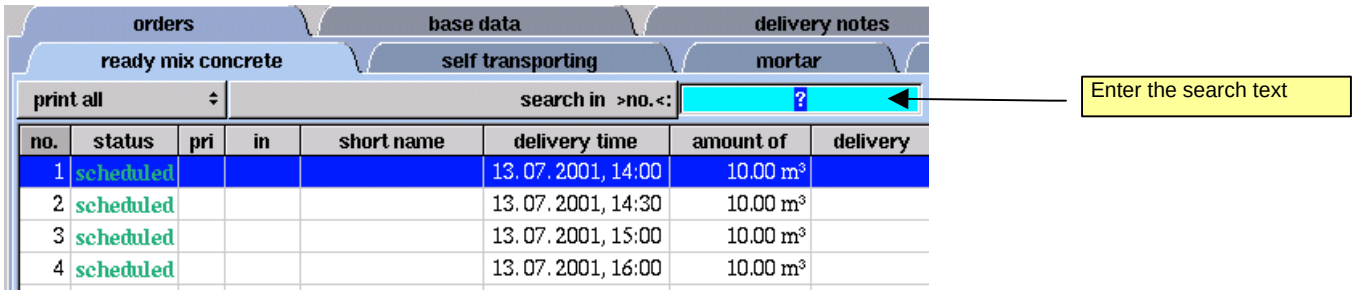


Figure 8-11: Search data

9 Main window

The most important areas in the main window are the 5 main tabs - orders, base data, delivery notes, configuration and statistics. Depending on the choice of main tab, additional sub-tabs with the appropriate contents are also displayed.

The program is adapted to the requirements of the mixing plant and of the customer via various configuration settings and options.

9.1 Base data

All data required for processing the orders is brought together under the base data tab. Here, with the record buttons “new”, “copy”, “delete” and “print” along with the detail area of the main window, there are all possibilities for compiling and editing the necessary data.

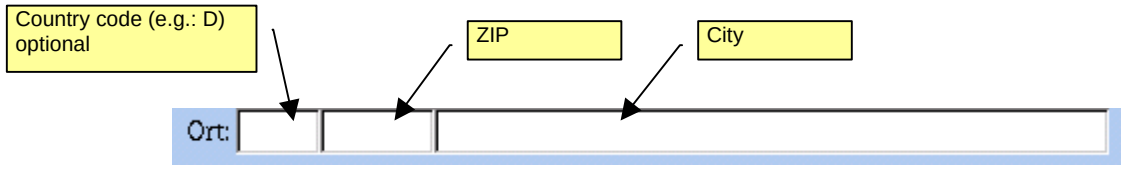
9.1.1 Dealer

A dealer / customer modular hierarchy is stored in MC400. This means that every customer is assigned to a dealer record. The dealer’s address appears on the delivery note and serves as a billing address. Customers who process their orders without dealers are assigned to the dealer record “0, no dealer”. In this case, the customer’s address appears on the delivery note.

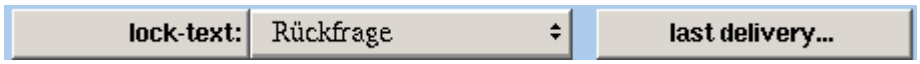
Attention:	The record “0, no dealer” may not be deleted. If a dealer is deleted, all customers with the job sites assigned to the dealer are deleted at the same time. Do not change the number of the dealer “0”.

Warning 1: The dealer “0 – no dealer” should not be deleted.

All input fields apart from the number are text fields. The possible input lengths are displayed via short references if the mouse pointer is above the field. There are 3 input fields in the line for the city.



There are further options in the dealer detail area:



lock-text: A dealer can be blocked for production via the lock-text identifier.

last delivery…: The last delivery is displayed.

9.1.2 Customer

Depending on the setting “no dealer” in Options->Plant (found under the menu point “General->Options“), only customers or the dealers and the list of customers for each dealer are listed.

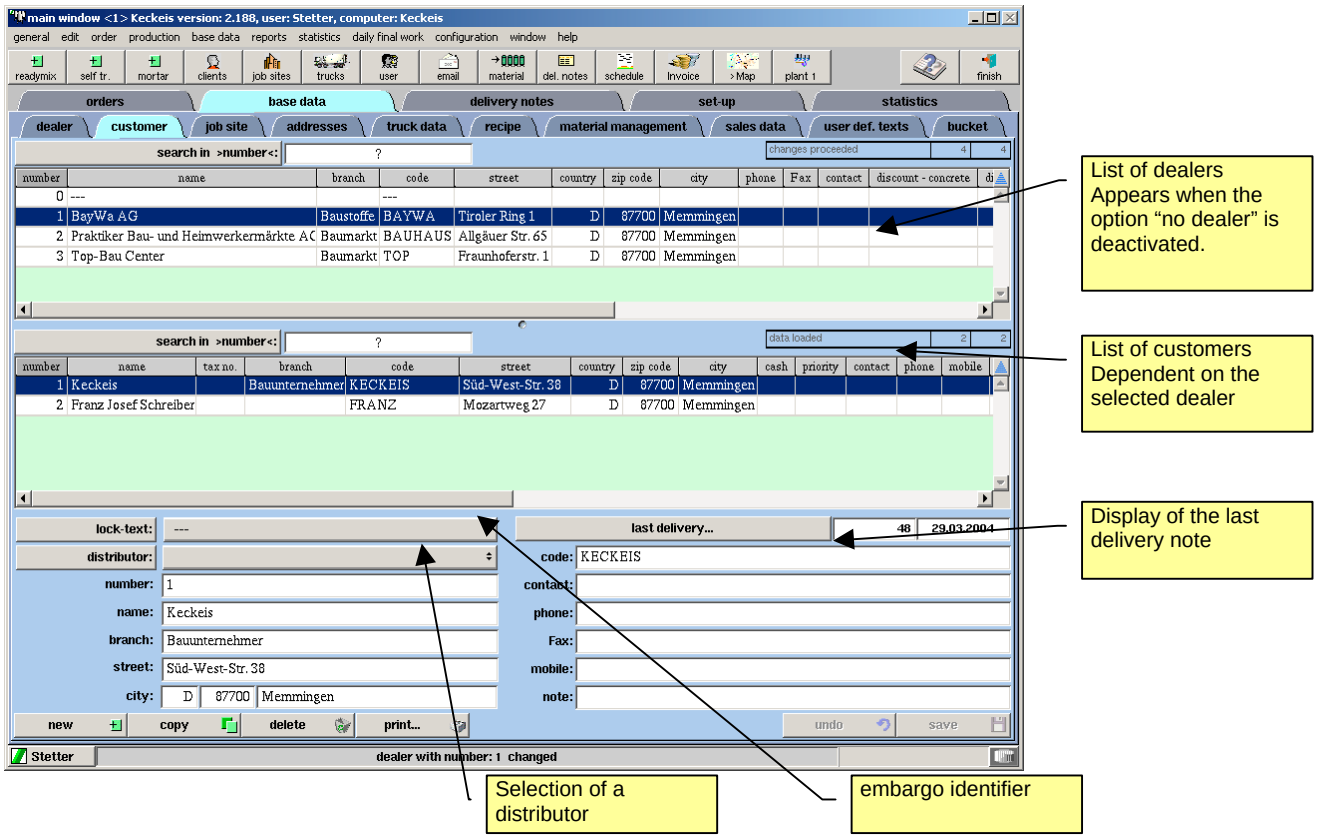


Figure 9-1: List of customers

lock-text: A customer can be blocked for production via the lock-text function.

distributor: An already existing distributor is assigned to a customer via the distributor selection button. New distributor records can be created with the “distributor” button.

last delivery: The last delivery is displayed.

The text entered in the “notice” input field appears when production is started for the order that contains this customer. This is useful when a notice text about a customer should be stored for the operator via a network workstation.

Tip 9-1: Notice text about a customer at the start of production

9.1.3 Job sites

Depending on the setting “no dealer” in Options->Plant (found under the menu point “General->Options“), only the customers with the associated job sites or also the dealers are listed.

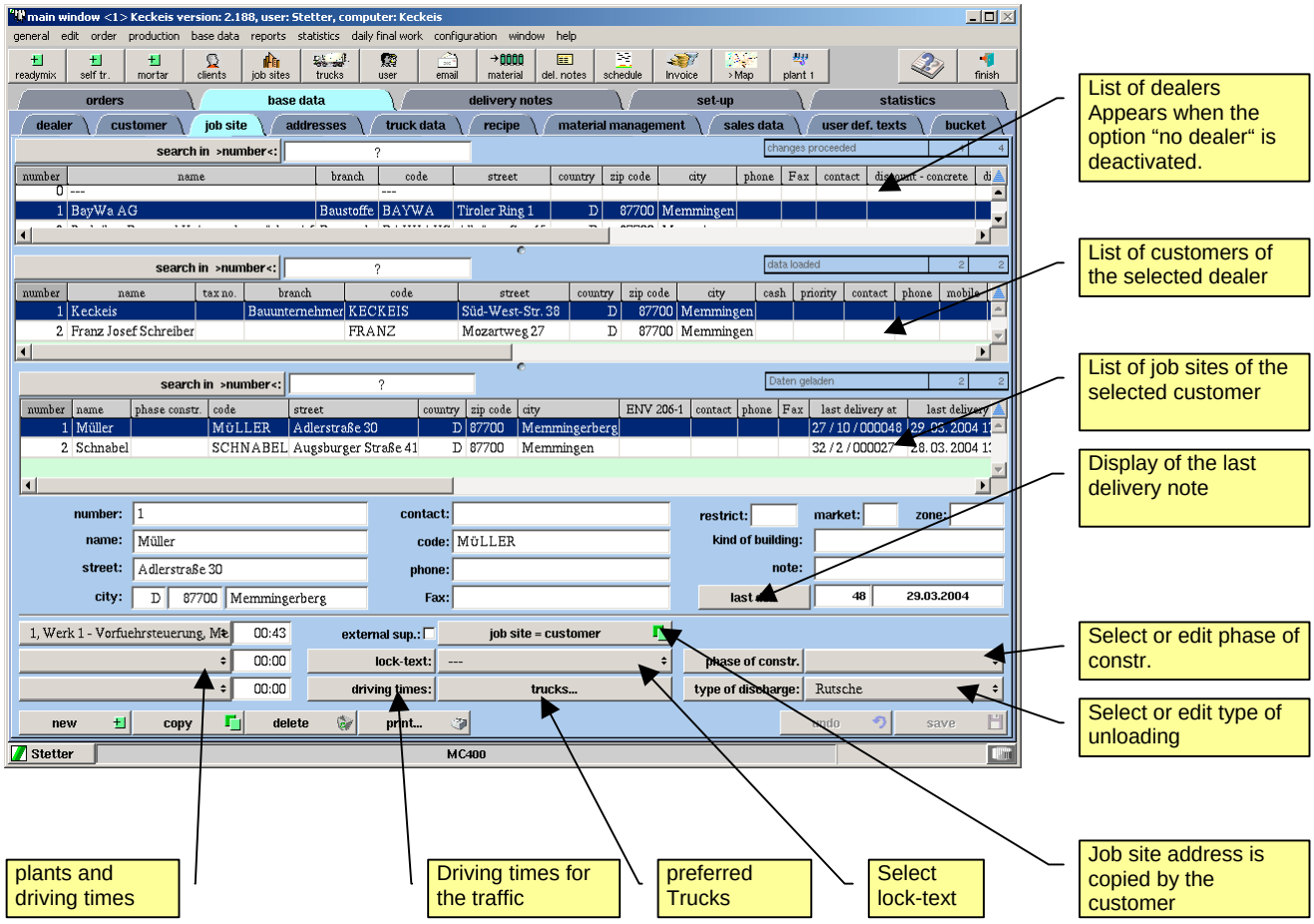


Figure 9-2: List of job sites

plants: The job site is assigned to different plants here (if available). If several plants are entered here, productions are planned for the different plants. Up to 3 plants are possible.

driving times: The driving time from a plant to the job site can be pre-selected for every job site. The value for the first plant is pre-assigned with 20 min. The driving times are automatically corrected if the truck status is changed (radio status). The driving times are necessary for calculating the deliveries. Traffic densities that influence the driving times are also stored based on the time of day.

trucks: Trucks can be preferred or blocked for the job site. This information is taken into account when calculating the deliveries.

lock-text: A job site can be blocked for production via the lock-text facility.

job site = customer: The job site address is compiled from the customer address.

type of unloading: The type of unloading defined here is used when an order is compiled. However, it can be changed there. The type of unloading conceals an unloading speed (m³/h). This unloading speed is taken into account in the production planning.

phase of constr.: The phase of construction is purely informative and still has no further meaning

last delivery: The last delivery is displayed.

The text entered in the “Notice” input field appears when production for the order for this job site starts. This is particularly useful when a note about a job site should be stored for the operator via a network workstation.

Tip 9-2: Note about a job site at the start of production

9.1.4 Address list

All addresses such as dealer, customers, job sites, drivers, transport sub-contractors and suppliers are listed here.

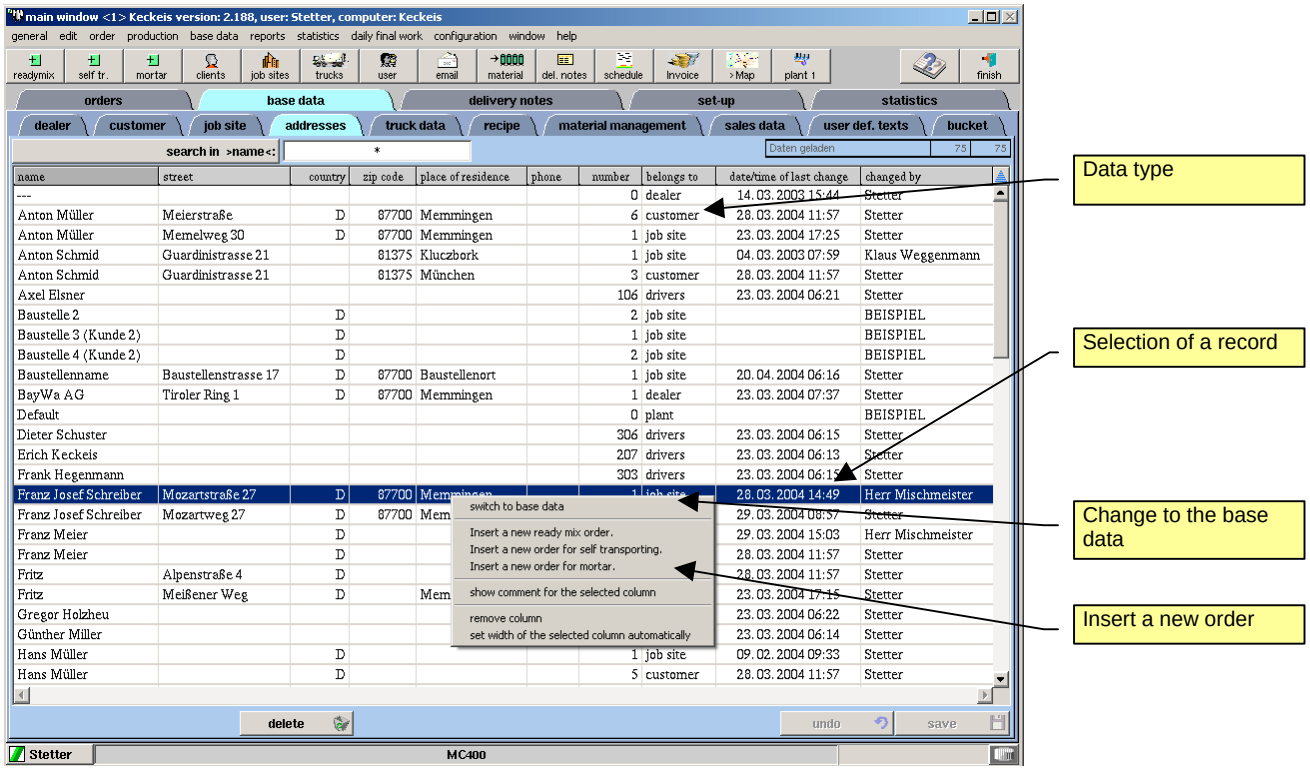


Figure 9-3: Address list

The address list offers the advantage of quickly searching for addresses. It is useful for quickly checking whether for example a customer already exists in the data stock or for quickly finding telephone numbers.

You can also change to the base data via this menu.

You can very quickly compile an order for a customer or for a job site by searching for the data, selecting the record and pressing the right mouse button. A menu appears. Here you can, for example, insert a new self-transporter order. The program then changes to the order input, automatically creates a new order and fills out the corresponding fields. In the case of the customer, the associated dealer and in the case of the job sites the dealer and the customer are transferred to the new order.

Tip 9-3: Compiling orders from the address list

9.1.5 Truck data

Under the tab “truck data” you will find information on the complete truck pool together with the associated drivers and transport subcontractors.

9.1.5.1 Trucks

Here you can create data of new trucks and change that of existing trucks. For every truck there is a possibility of entering a notice.

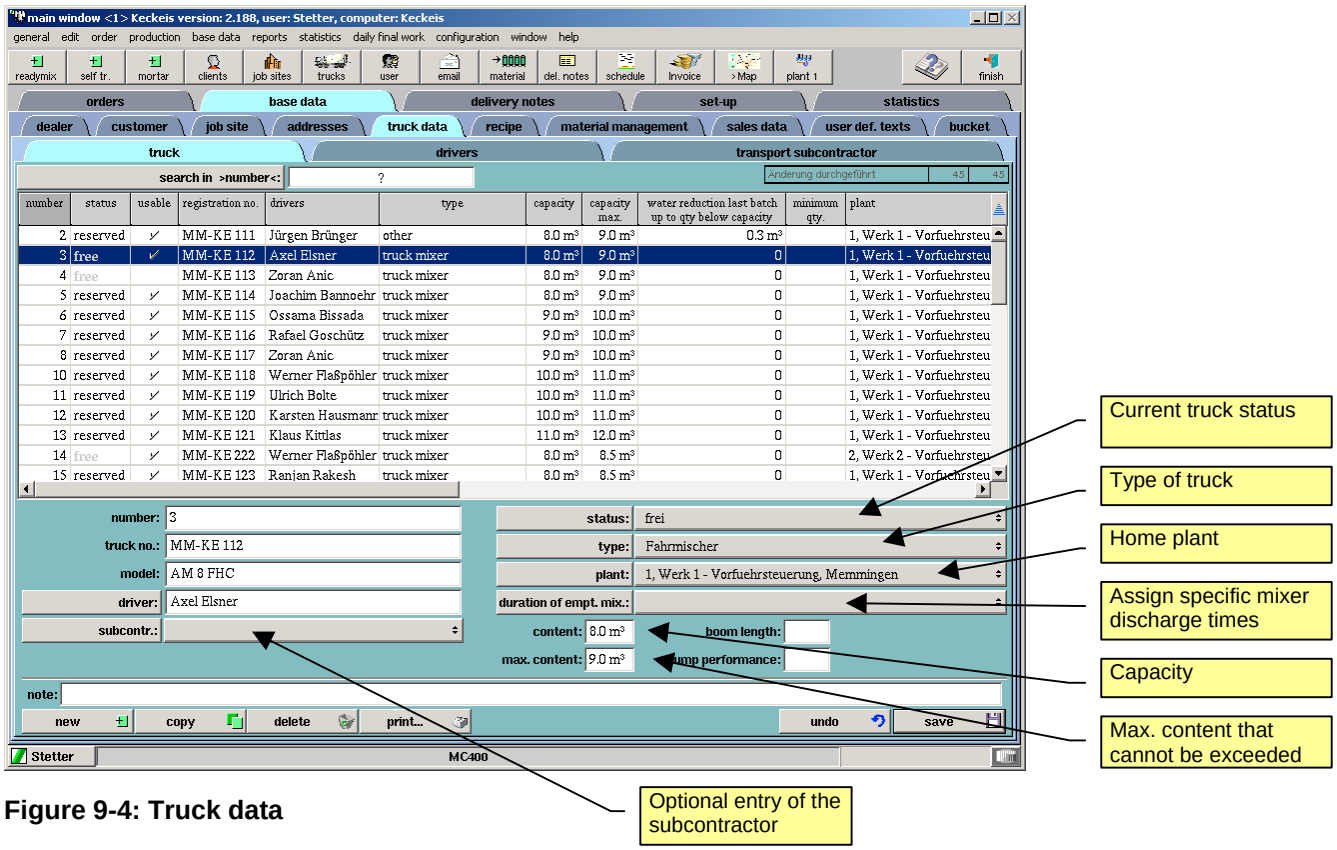


Figure 9-4: Truck data

status: The present truck status is displayed here. The status can be set manually or automatically (radio status).

usable: If this field is marked, the truck can be incorporated into the production planning.

type: After the truck type there is information that is important in relation to the discharge type of the mixer.

Example:

The truck is of the bucket transport system type and a second mixer discharge is also of this type. When production starts, the correct mixer discharge is automatically selected.

If a truck of the type “other” is selected for a production, the registration number can be overwritten in the production order. This is useful if trucks are used as a space-saver for unknown trucks.

plant:	States the associated plant.
capacity (content):	This is the loading quantity that is issued for a production in production planning.
max. content:	This is the loading quantity that cannot be exceeded.
water reduction last batch up to qty. below capacity:	In the recipes you can define a water quantity which will be subtracted from the total water in the last batch. The water reduction is made only if the production quantity exceeds the capacity - this value. Example: here is a value of 0,3 m³ and the truck has a capacity of 9 m³. The water will be reduced if the qty is more than 8,7 m³. *(siehe 9.1.6.6 Recipe* - Mixer data *on page 62)*

An example of what can be entered as a notice includes the truck's next roadworthiness inspection. This notice then appears as a message at the start of production when this truck is to be loaded.

Tip 9-4: Notice text about a truck at the start of production

The deliveries are planned automatically. If a truck should be ignored for a short time in the planning, simply remove the marking in the "usable" field by clicking with the mouse.

Tip 9-5: Blocking a truck for the planning.

In the list of trucks you will find a column with the heading "spare truck". At least one spare truck is required for the planning. If all trucks have been planned in the production planning, the spare truck is used as a space saver. Mark the spare truck and click with the mouse on the "spare truck" field. A small tick appears.

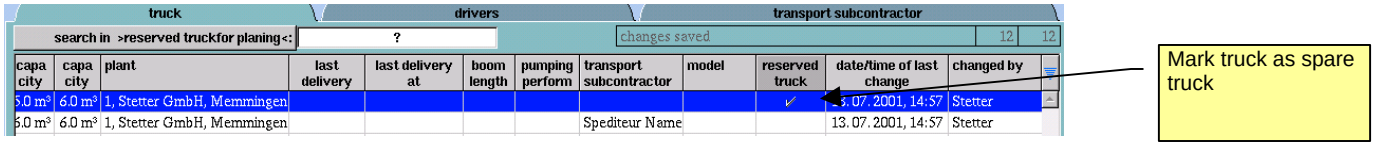


Figure 9-5: Marking the truck as the spare truck

Trucks that are marked as the spare truck cannot be deleted.

9.1.5.2 Driver

The drivers and their private addresses can be created here. Notices are also possible here.

This notice then appears as a message at the start of production if a truck with this driver is loaded.

Tip 9-6: Notice text about a driver at the start of production

9.1.5.3 Transport subcontractors

The addresses of the transport subcontractors are stored here.

9.1.6 Recipes

The recipes are identified via the recipe number (numerical 1 to 99999999), the short code (alphanumerical 110-digit) or the recipe code (alphanumerical 30-digit). The recipe entry is divided up into different areas. The description is created first, followed by the mix designand finally the mixer data.

9.1.6.1 Concrete Families

< in preparation >

9.1.6.2 Description

The description generally concerns details about the recipe. This includes, among other things, the recipe number, the short code, the recipe code, the recipe type (B I, B II, mortar etc.), the strength class, the characteristics etc.

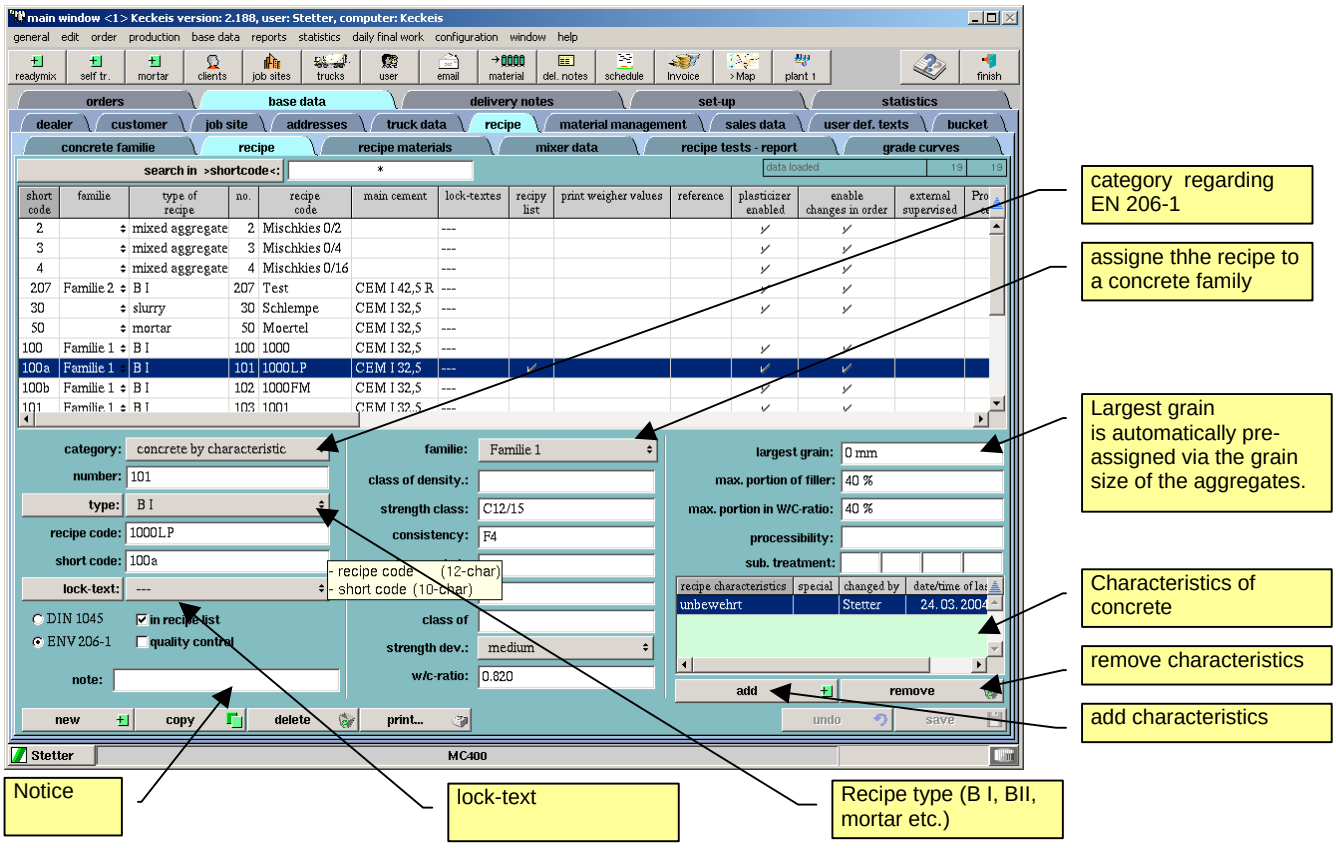


Figure 9-6: Recipe – description

characteristics of concrete:

New characteristics are added to the list with the “add” button. The characteristics can be taken from a list.

The marked characteristic is removed with the “remove” button. As many characteristic texts as required can be selected for a recipe. However, of these only

	the first three are printed out on the delivery note.
type:	The recipe type can be selected with the selection button. If a required type is not in the list, it can be added via the “type” button. Possible entries are: B I, B II, concrete, plaster, high strength concrete, coated gravel, mortar and cement paste.
embargo:	A recipe can be blocked for production via the embargo function.
max. portion of filler:	This enables the maximum portion of admixture (e.g. filler) of the recipe to be limited. The percentage of the filler to be entered refers to the total quantity of cement.
max. portion in W/C-ratio:	Maximum portion of filler regarding the cement amount for the w/c calculation. *see also 9.1.6.4 W/C-Ratio Calculation on page 57*

This notice then appears as a message at the start of production. This can be, for example, a notice to pay attention to the consistency.

Tip 9-7: Note about a recipe at the start of production

When a new recipe type is created and saved, a selection window automatically opens for the various materials of a recipe. There you can select all recipe materials.

9.1.6.3 Mix designes

Here you can change the already created materials and quantities for exiting recipes.

If you have created and saved a new recipe type in the “description” tab, you are automatically taken to the “recipes” tab. There it is only necessary to enter the required quantity for the materials.

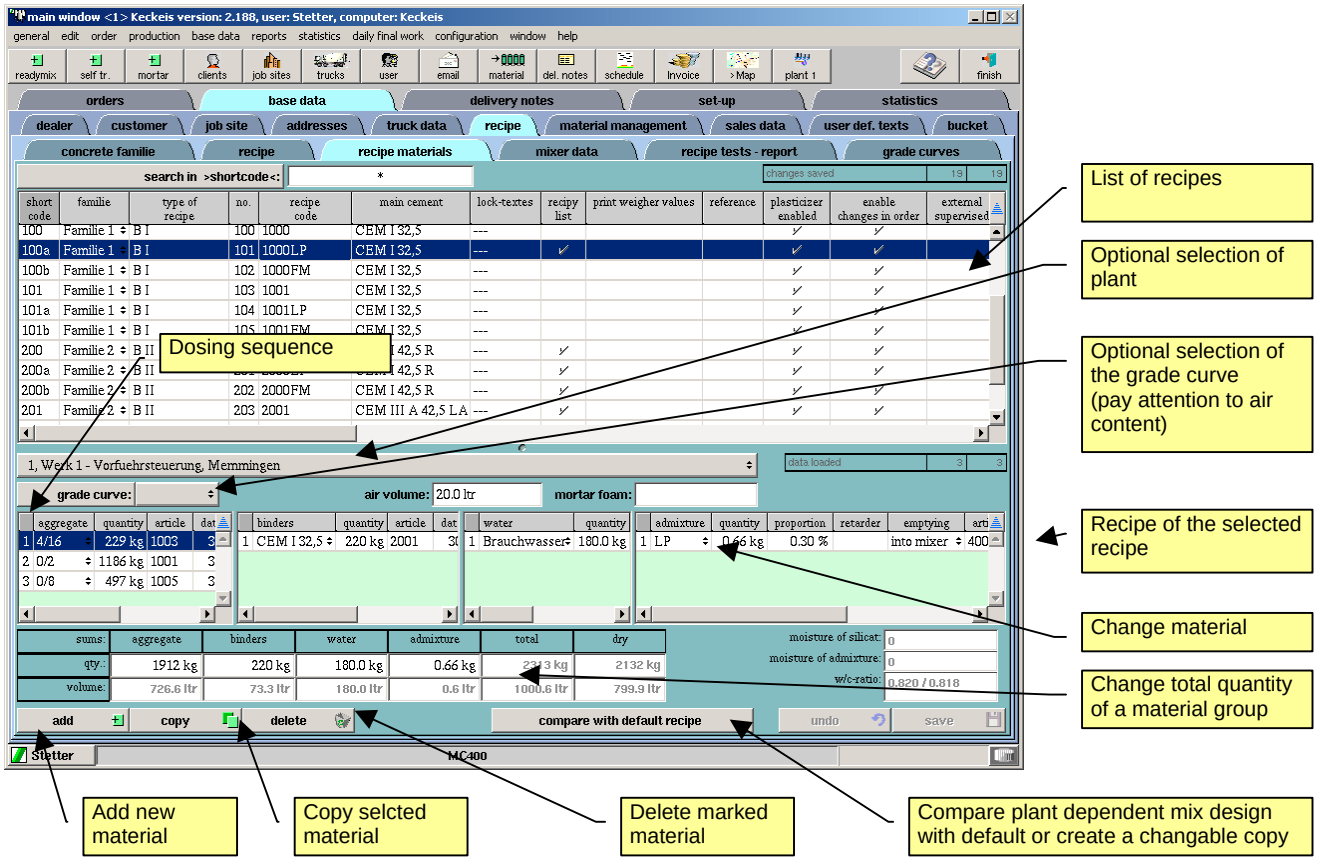
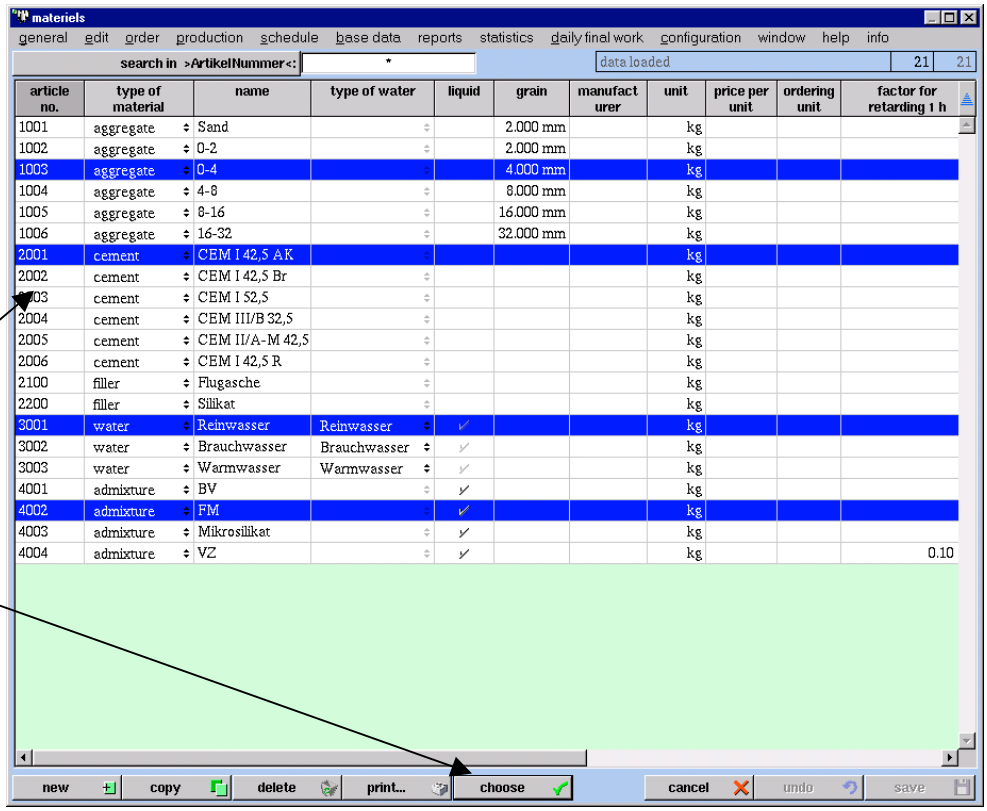


Figure 9-7: Recipe

recipe: Recipe of the selected recipe. Each table contains the materials that are dosed into a weigher.

add:



article no.	type of material	name	type of water	liquid	grain	manufacturer	unit	price per unit	ordering unit	factor for retarding 1 h
1001	aggregate	Sand			2.000 mm		kg			
1002	aggregate	0-2			2.000 mm		kg			
1003	aggregate	0-4			4.000 mm		kg			
1004	aggregate	4-8			8.000 mm		kg			
1005	aggregate	8-16			16.000 mm		kg			
1006	aggregate	16-32			32.000 mm		kg			
2001	cement	CEM I 42,5 AK					kg			
2002	cement	CEM I 42,5 Br					kg			
2003	cement	CEM I 52,5					kg			
2004	cement	CEM III/B 32,5					kg			
2005	cement	CEM II/A-M 42,5					kg			
2006	cement	CEM I 42,5 R					kg			
2100	filler	Flugasche					kg			
2200	filler	Silikat					kg			
3001	water	Reinwasser	Reinwasser	✓			kg			
3002	water	Brauchwasser	Brauchwasser	✓			kg			
3003	water	Warmwasser	Warmwasser	✓			kg			
4001	admixture	BV		✓			kg			
4002	admixture	FM		✓			kg			
4003	admixture	Mikrosilikat		✓			kg			
4004	admixture	VZ		✓			kg			0.10

Figure 9-8: Recipe – Material selection

A list of materials with all available materials is opened. One or more materials can be marked here and transferred to the recipe with the “choose” button. The assignment to the scales takes place automatically via the material type.

When materials have been added, the quantity and dosing sequence still have to be edited.

copy: A selected material is copied.

delete: Remove a selected material from the recipe.

dosing sequence: This column shows the dosing sequence. You can change the sequence by changing the numbers. When the column heading of the dosing sequence is dark grey, the materials are shown sorted according to the dosing sequence. The sequence is defined by stating the numbers and not by the listing.

total quantity of a material group: If this quantity is changed, the individual materials of this group are changed proportionally.

change material: The marked material is displayed in this selection button. Another material of the same material group can be selected with the selection button.

grade curve: The aggregates can optionally be selected directly or via a grade curve. The proportional composition of the aggregates is stored in the case of the grade curves. The quantities are obtained from the volumes of the materials contained in the recipe, their densities and the air content. If a grade curve is chosen, pay attention to the air content.

The grade curve function is deactivated again by selecting the first entry (blank) of the selection window.

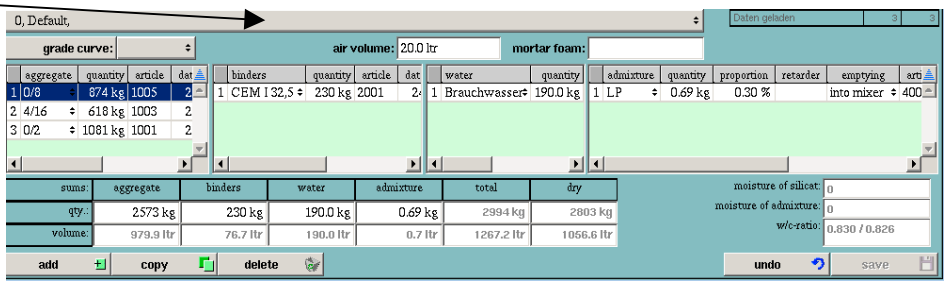
w/c-ratio: The defined value and the w/c value calculated with the selected quantities are displayed here.

see also 9.1.6.4 W/C-Ratio Calculation on page 57

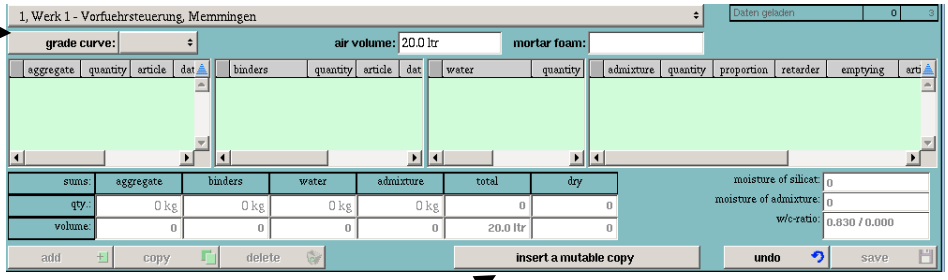
plant dependant mix designes: This feature is only available in case of a network of several plants. The recipes are available on each plant. For adapting a recipe to the possibilities of a special plant choose first the plant and use the button “insert a mutable copy”.

If several plants are within a network the MC400-systems on the plants are configured in a way that the default recipes can’t be changed on the plant. In the central station (mostly the dispatchers computer) a mutable copy has to be created for the plants. If there is no mutable copy the mix design is visible on the plant, but can’t be changed.

1. choose plant “0” to edit the original mix design

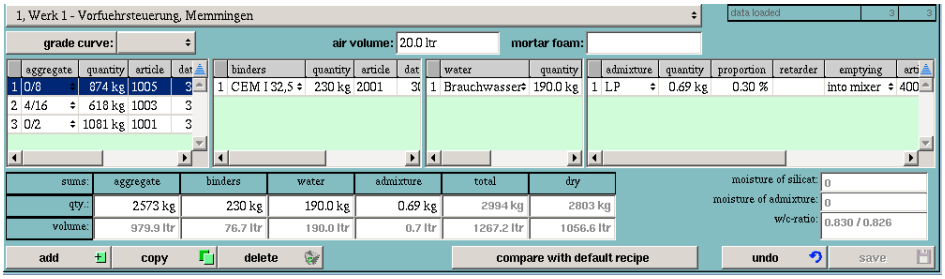


2. select the plant

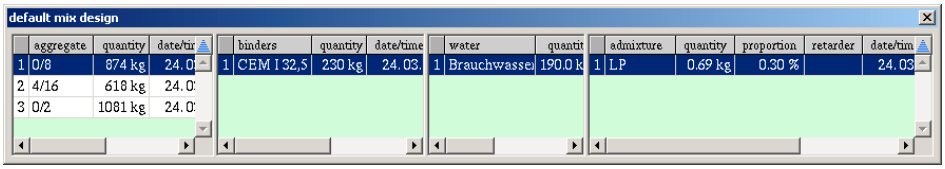


3. insert a mutable copy

4. modify the mix design



5. compare with the default mix design



9.1.6.4 W/C-Ratio Calculation

$$\text{W/C value} = \frac{\text{qty. of water} + (w_s * \text{silicate}) + \sum (w_z * \text{admixture}) + \text{aggregate moisture}}{\sum \text{cements} + (b_f * m_f) + (b_s * m_s)}$$

Figure 9-9: W/C calculation

whereby:

w_s: Water quantity of the silicate

w_z: Water quantity of the admixture, if amount > 3 ltr.

b_f: Binding factor of the admixture (in base data ->material data-> add materials)

m_f: Quantity of the admixture or max. portion in W/C value referred to the cement quantity (in the recipe / description)

b_s: Binding factor of the silicate (in base data -> material data-> add materials)

m_s: Quantity of the silicate solid or max. silicate proportion (11%, in base data -> material data-> add materials)

9.1.6.5 Special

9.1.6.5.1 Recipes with grade curve

Before you create a recipe with a grade curve, these must be entered.

(see 9.1.6.7 Recipe test

Supporting the quality control MC400 has a recipe test function implemented.

According to EN206-1 the compliance of the regulations for recipe test has to be observed.

Recipe test probes has to be taken random and according to EN12350-1. The Table 9-1 shows the criteria for the probes.

production	minimum frequency of probe sampling		
	the first 50 m³	after the first 50 m³	
		concrete with certificate of test protocols	concrete without certificate of test protocols
first-production (at least 35 results)	3 probes	1 / 200 m³ or 2 / production week	1 / 150 m³ or 1 / production day
continues production (at least 35 results)		1 / 400 m³ or 1 / production week	

Table 9-1: minimum frequency of sampling test data

9.1.6.5.2 Recipe test - productions

For the recipes it has to be defined whether the test protocols have a certificate. In the column “prod.protocol certificate” a check mark has to be set. In addition the recipe has to be marked as continues production (check mark in the column “continues production”). If the recipe belongs to a family a change of will be set to all recipes of this family. The limit quantity requiring a test is set automatically (“test when quantity reached”).

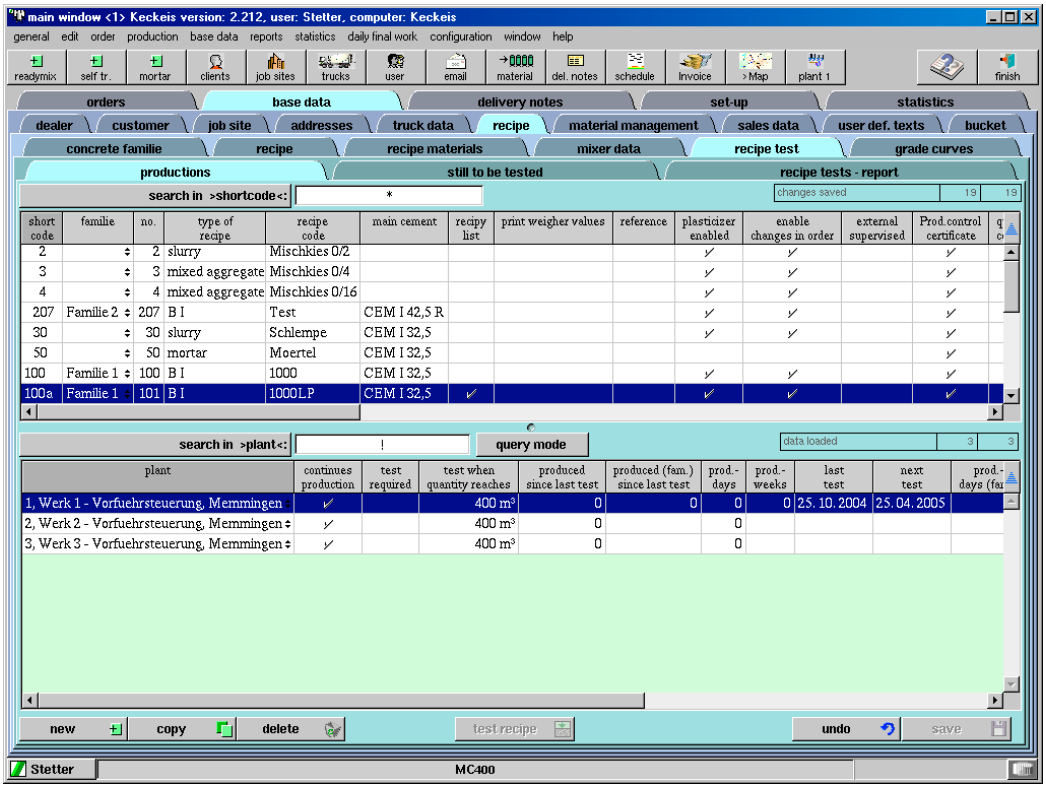


Figure 9-11: Data for supervising the recipe production

With each production of a recipe the data production days, - weeks, produced will be updated.

A warning appears if one of the following criteria is valid

1. the test quantity is reached
2. the count of maximum production days is reached. This is 6 days for continues production or 3 days for non-continues production
3. the last test is older than 6 months (continues prod.) or 3 months (non-continues prod.)
4. there is no test information available

The warning can be switched on/off within the options. (menu: general->options->others: “Show message to test recipe”)

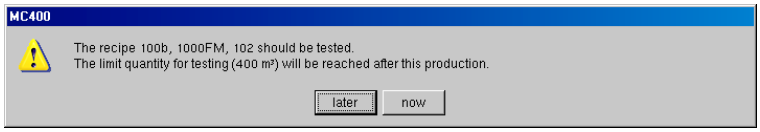
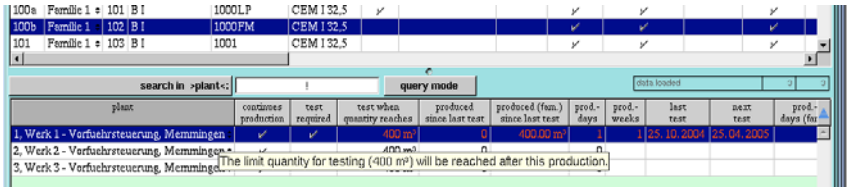


Figure 9-12: Requesting a test probe

later The recipe is marked as “test required”. The display colour will change to red.



A hint with the warning message is shown if the record is selected

In the tab “still to be tested” you will find all recipes which requires a test.

now A test probe will be taken after the running production. All production data according to recipe tests will be resetted. A new record will be inserted into the list “recipe test reports”

see 9.1.6.7.2 Recipe test - report on page 68

9.1.6.5.3 Recipe test - report

For each probe a record will be created. This will be done automatically or manually using the button “test recipe” in “recipes->recipe test->productions”

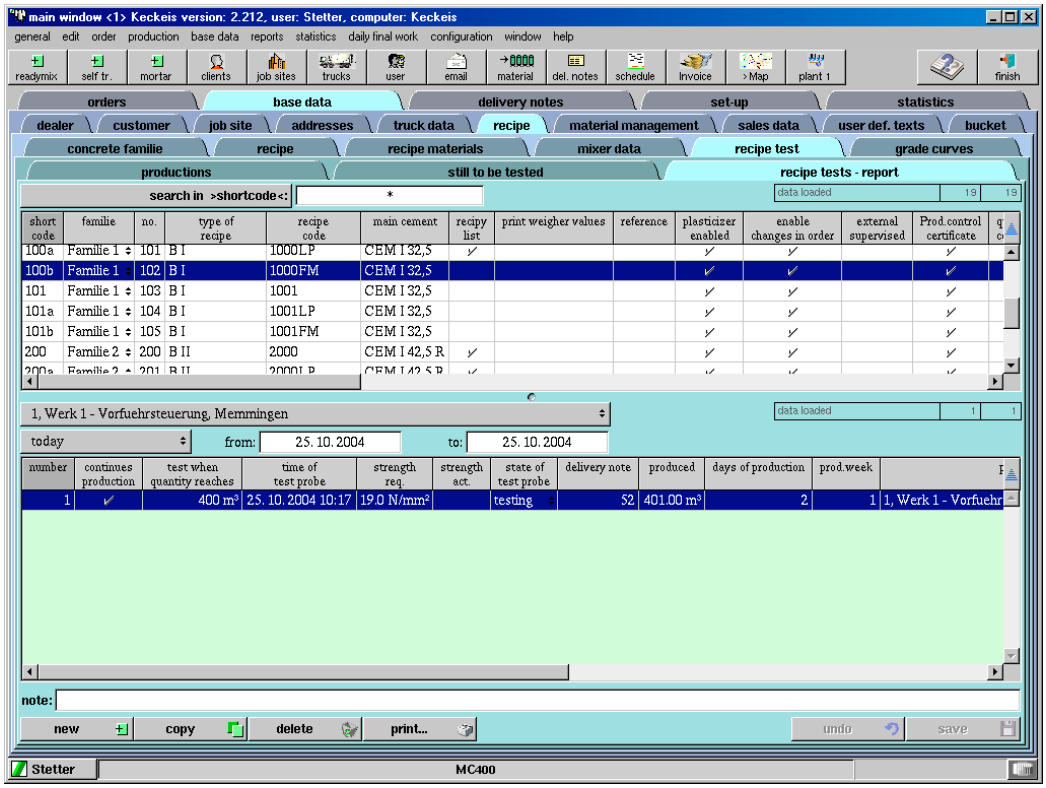


Figure 9-13: Managing the recipe test protocols

The state of the test is set to “testing”. When tested the recipe you should insert the measured strength into the field “strength act.” The inserted value will be compared to the requested strength. The resulting state is “OK” (if strength act. > strength req. + 4 N/mm²) or “not ok”

Grade curves *on page 65)*

Enter in the recipe all materials required for the recipe with the exception of the aggregates and their quantities. The volumes are calculated with the aid of the densities stored in the materials. Next, determine the air content. Now select a grade curve. The individual aggregates and their quantities are calculated automatically.

9.1.6.5.4 Mortar recipes

A mortar recipe must be defined as such in the recipe description. If a mortar foam is required in a mortar recipe, enter its dosing time in the “mortar foam” field. The dosing time must be taken from the documents of the mortar foam gun. The dosing time defines the quantity.

The mortar foam is dosed after the start of the mixing time. An additional delay time “delay mortar foam addition after mixing time start “ can be found in the plant parameters. The addition can be delayed slightly here.

If a mortar foam gun is required for dosing, this must be marked in the mixer data *(see 13.1.2.2 Configure mixer, Page 106)*

9.1.6.5.5 Slurry

Slurry refers to recipes without aggregates. The recipe type must be selected accordingly. If a recipe does not contain an aggregate and is not marked as slurry, the dosing program waits for the aggregates to be added.

9.1.6.5.6 Mixed aggregates

Coated gravel refers to recipes that contain only aggregates. The recipe type must be selected accordingly. Otherwise, an error message appears during dosing.

9.1.6.5.7 High strength concrete

see 9.1.6.9 High strength concrete, Page 70

9.1.6.6 Recipe - Mixer data

It is possible to assign plant and recipe dependant mixer data. These are mixing times, partial opening times and more. If no values are entered the base parameter of the plant are used.

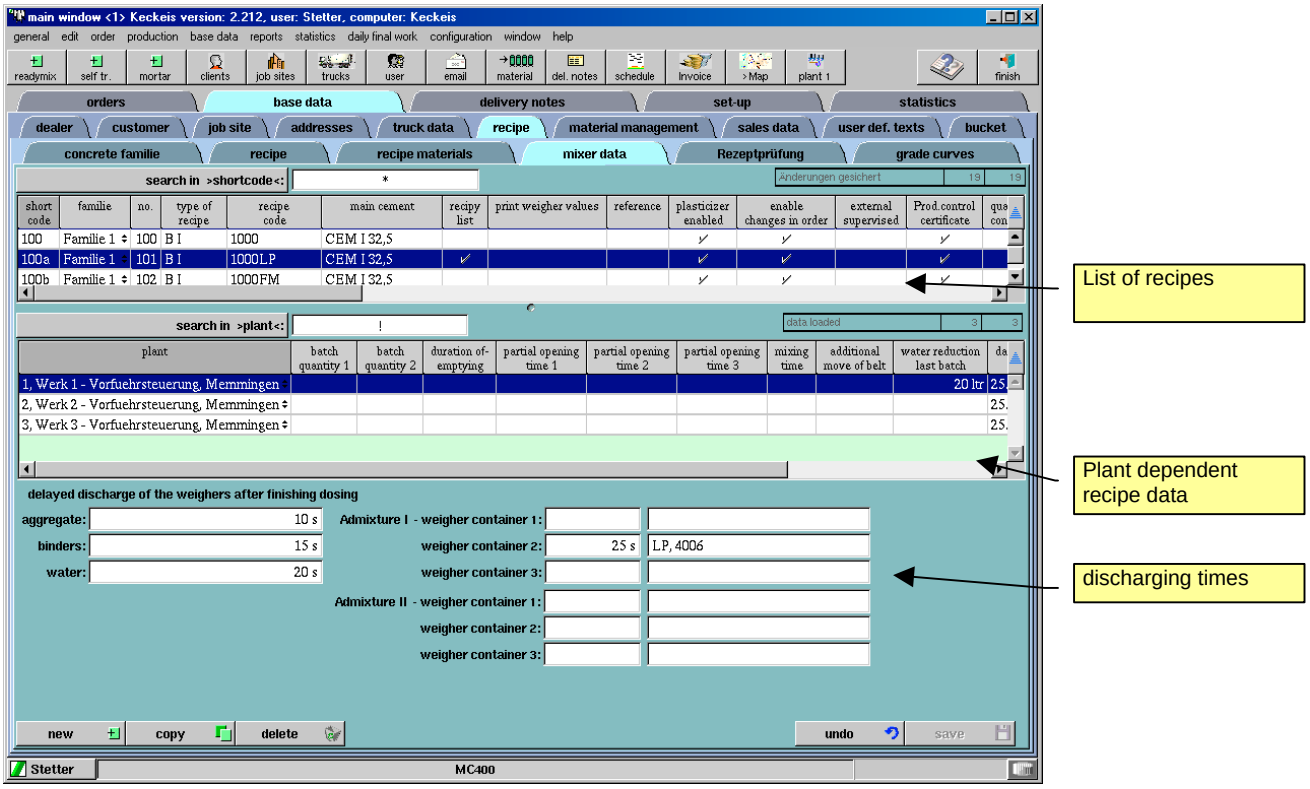
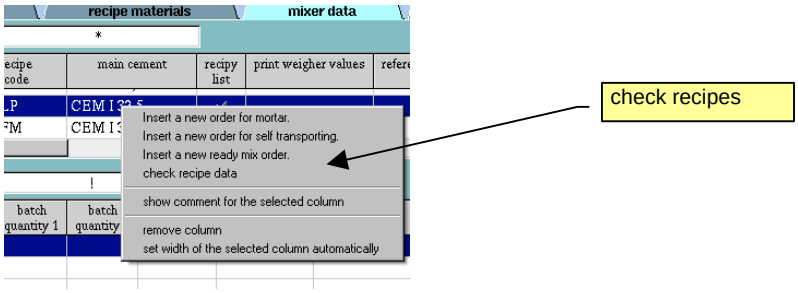


Figure 9-10: Recipe – Mixer data

Using the button “new” a new plant record will be inserted. For each plant a record is necessary. The easiest and fastest way doing this is using the right mouse context menu “check recipe date” in the list of the recipes.



Plant:	If the plant 0 is selected here, the data applies to all plants. Entries for several plants can be made in addition or alternatively.
batch quantity 1 (mixer 1): ***batch quantity 2 (mixer 2):***	The batch quantity entered here applies to the production. If no value or 0 is entered, the batch quantity is automatically calculated on the basis of the size of the mixer. Therefore leave this field blank if you do not want to explicitly set the batch quantity.
mixing time:	Mixing time for the recipe.
partial opening 1-3:	During this period, the mixer flap remains in the 3 partially open positions.
duration of emptying:	This is the emptying time when the mixer is fully open.
water reduction last batch:	The water will be reduced by this quantity (in ltr.) in the last batch if the production quantity exceeds the limit which is set in the truck data.

(see 9.1.5.1 Trucks on page 49)

9.1.6.7 Recipe test

Supporting the quality control MC400 has a recipe test function implemented.

According to EN206-1 the compliance of the regulations for recipe test has to be observed.

Recipe test probes has to be taken random and according to EN12350-1. The Table 9-1 shows the criteria for the probes.

production	minimum frequency of probe sampling		
	the first 50 m³	after the first 50 m³	
		concrete with certificate of test protocols	concrete without certificate of test protocols
first-production (at least 35 results)	3 probes	1 / 200 m³ or 2 / production week	1 / 150 m³ or 1 / production day
continues production (at least 35 results)		1 / 400 m³ or 1 / production week	

Table 9-1: minimum frequency of sampling test data

9.1.6.7.1 Recipe test - productions

For the recipes it has to be defined whether the test protocols have a certificate. In the column “prod.protocol certificate” a check mark has to be set. In addition the recipe has to be marked as continues production (check mark in the column “continues production”). If the recipe belongs to a family a change of will be set to all recipes of this family. The limit quantity requiring a test is set automatically (“test when quantity reached”).

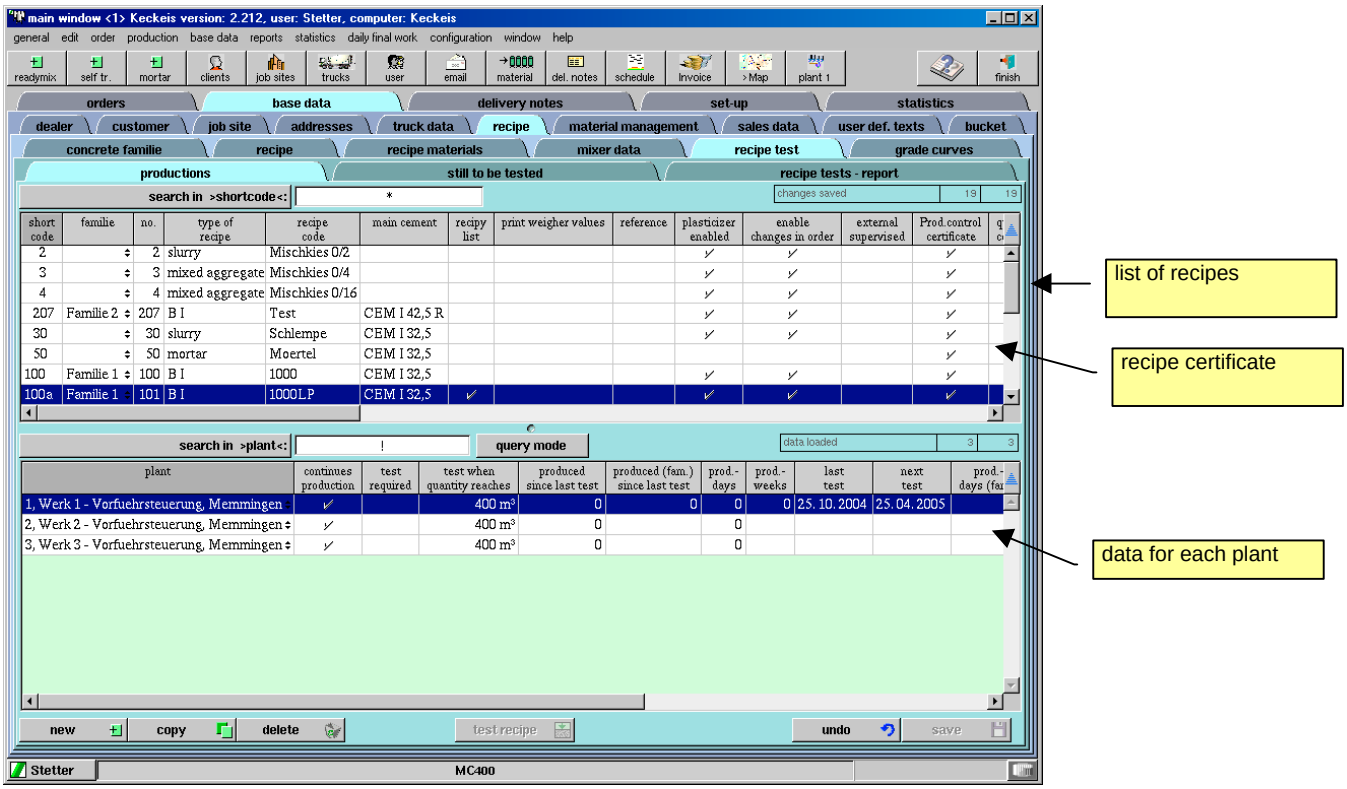


Figure 9-11: Data for supervising the recipe production

With each production of a recipe the data production days, - weeks, produced will be updated.

A warning appears if one of the following criteria is valid

5. the test quantity is reached
6. the count of maximum production days is reached. This is 6 days for continues production or 3 days for non-continues production
7. the last test is older than 6 months (continues prod.) or 3 months (non-continues prod.)
8. there is no test information available

The warning can be switched on/off within the options. (menu: general->options->others: “Show message to test recipe”)

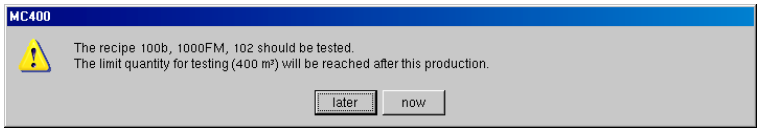
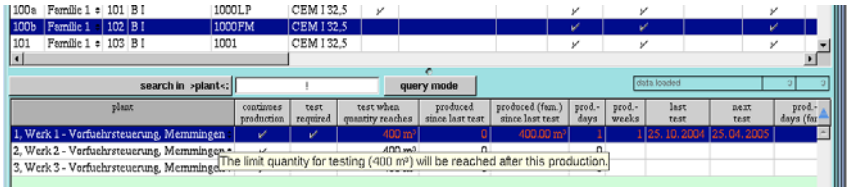


Figure 9-12: Requesting a test probe

later The recipe is marked as “test required”. The display colour will change to red.



A hint with the warning message is shown if the record is selected

In the tab “still to be tested” you will find all recipes which requires a test.

now A test probe will be taken after the running production. All production data according to recipe tests will be resetted. A new record will be inserted into the list “recipe test reports”

see 9.1.6.7.2 Recipe test - report on page 68

9.1.6.7.2 Recipe test - report

For each probe a record will be created. This will be done automatically or manually using the button “test recipe” in “recipes->recipe test->productions”

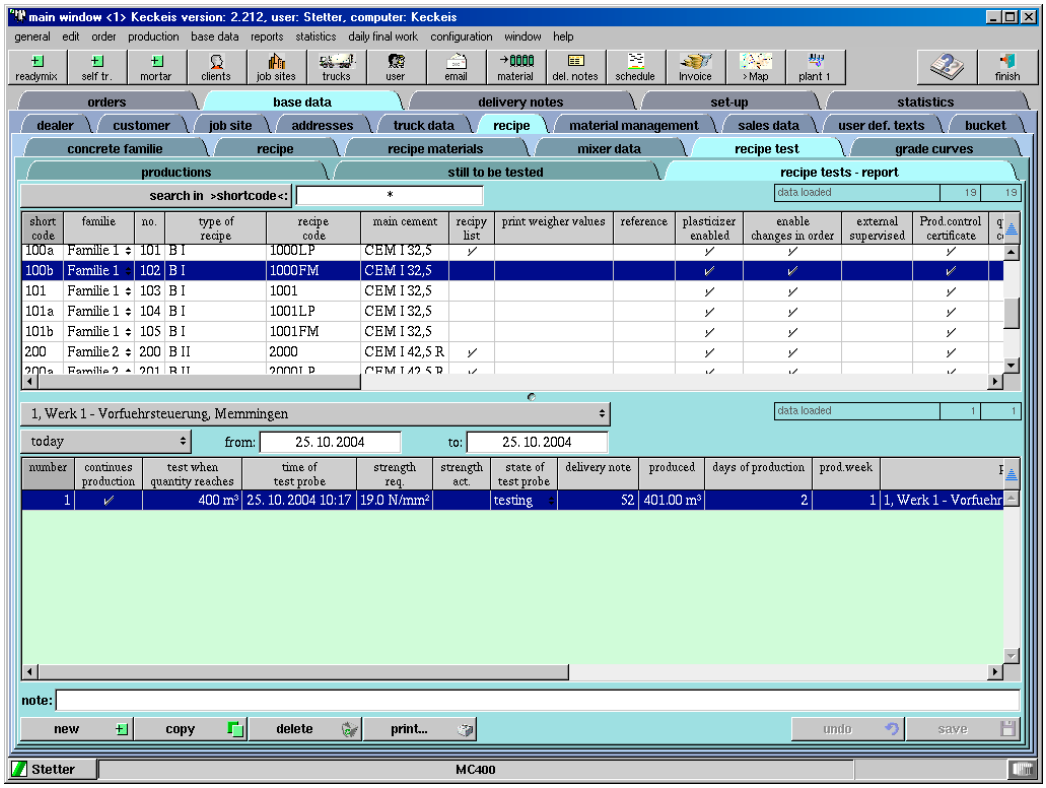


Figure 9-13: Managing the recipe test protocols

The state of the test is set to “testing”. When tested the recipe you should insert the measured strength into the field “strength act.” The inserted value will be compared to the requested strength. The resulting state is “OK” (if strength act. > strength req. + 4 N/mm²) or “not ok”

9.1.6.8 Grade curves

Grade curves as defined by DIN 1045 and the data of their aggregates can be entered here.

So that it is possible to create a new grade curve with its aggregates, it is first necessary to give and save a name for the grade curve with the “new“ button of the upper table. Different aggregates can then be assigned to this grade curve with the “new“ button of the lower table.

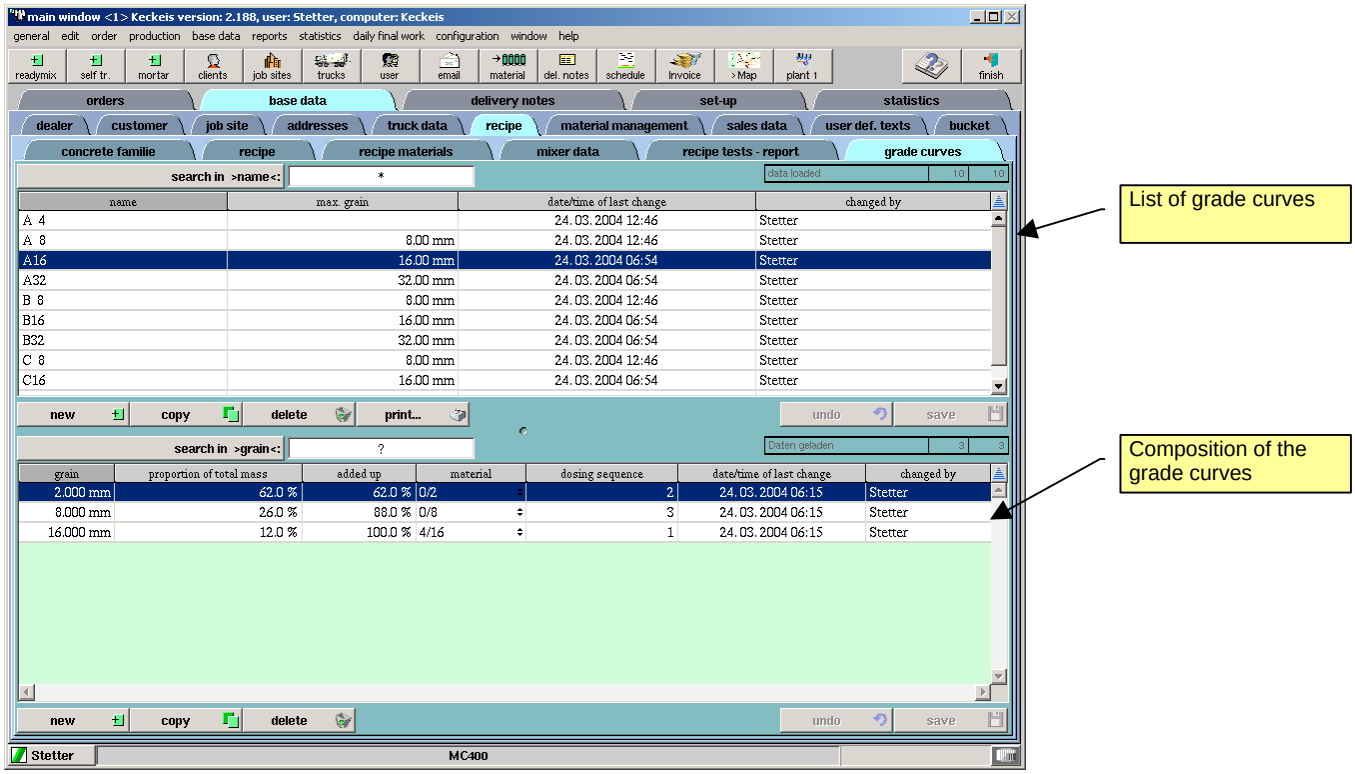


Figure 9-14: Grade curves

dosing sequence:	Defines the dosing sequence
proportion of total mass:	The proportion of total mass of the aggregate. The value is automatically calculated for the last component.
added up:	The added-up proportion of total mass of the aggregate.

9.1.6.9 High strength concrete

9.1.6.9.1 Creating materials

So that a recipe for high strength concrete can be created, the materials (silicate dust, plasticizer) must be available.

A new record is created via the main window tabs: base data->material management->materials.

(see: 16.6 Create and change list of materials, Page 134)

Silicate is selected as the material type. Important details are:

- Water content
- Density
- Max. countable portion of silicate (11%)
- Binding factor (e.g.: 1.0)

A silo record for the silicate is then created via base data -> plant -> silos.

(see: 16.7 Create and change silos, Page135)

4 must be entered as the silo number for the silicate.

Finally, another record “recipe - silo assignment” is compiled. You can find the silicate in the list on the left.

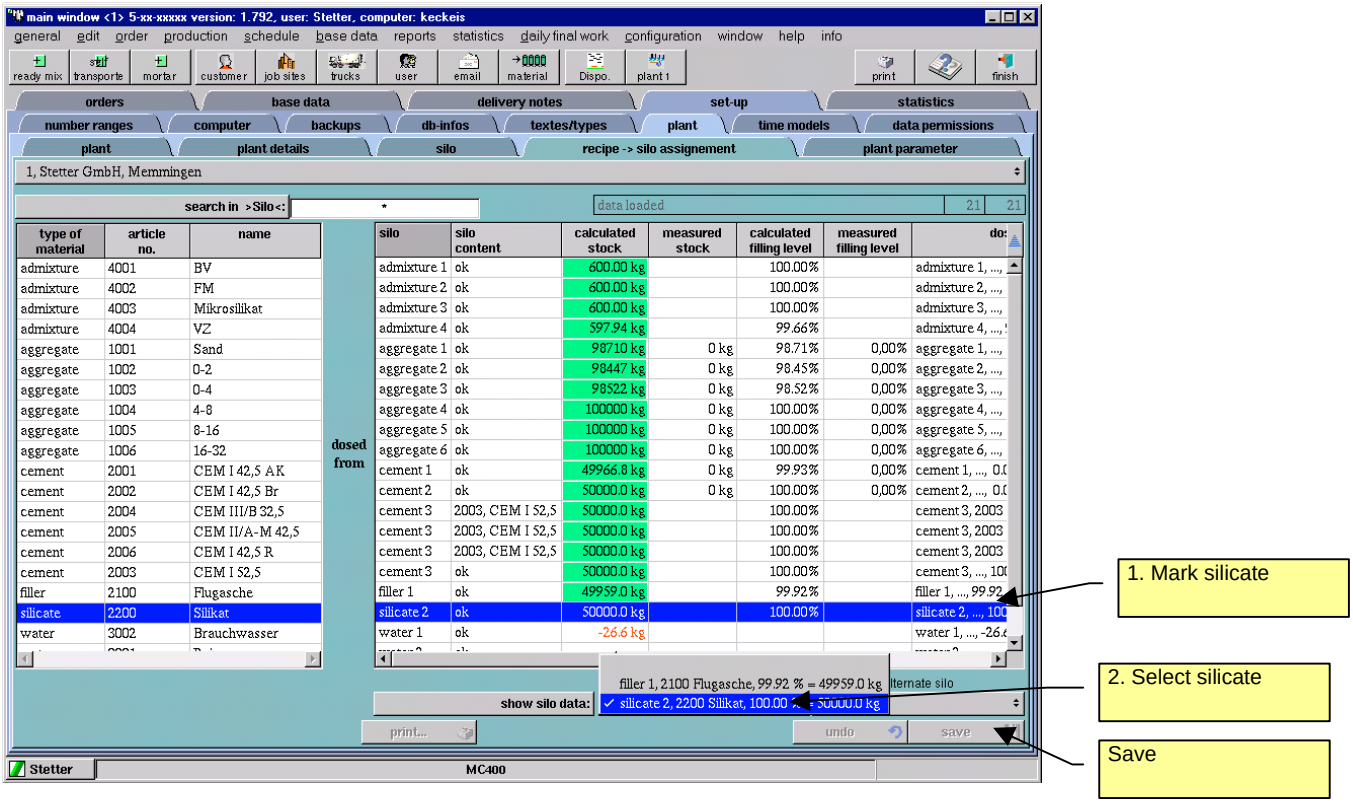


Figure 9-15: Enter silicate in the recipe - silo assignment table

Proceed in the same way for creating the new plasticizer.

9.1.6.9.2 Create recipe

Recipes for high strength concrete must be identified as such in the recipes->description.

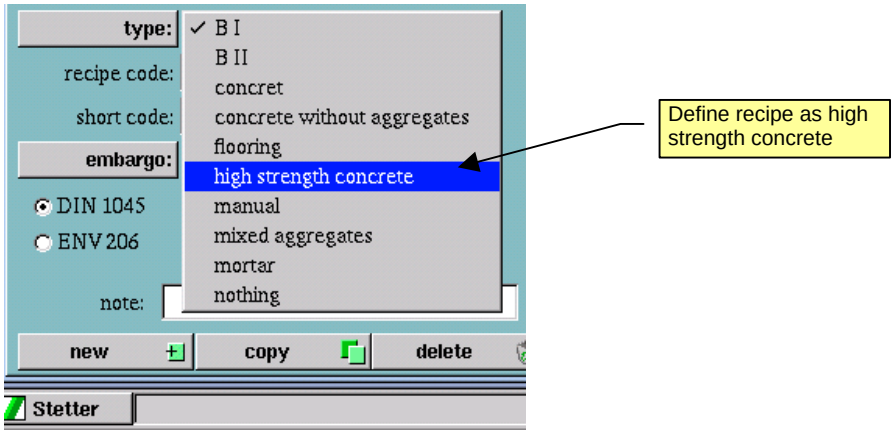


Figure 9-16: Identify recipe as high strength concrete

"BII" is automatically printed as the concrete group on the delivery note in the case of high strength concrete.

Entering the recipe can be found in *9.1.6 Re Page 52*.

There are a few special characteristics.

- No recycled water is allowed
- Silicate must be entered as the admixture. The water contained in the silicate is stored in the materials.
- For the purpose of dosing, the quantity of silicate / water and the water content of each admixture is subtracted from the total water added.
- The quantity of silicate is taken into account in the w/c calculation.
- In the w/c value, every admixture is added to the water with the corresponding water content.

$$\text{W/Z value} = \frac{\text{qty. of fresh water} + (w_s * \text{silicate}) + \sum (w_z * \text{admixture}) + \text{aggregate moisture}}{\sum \text{cements} + (b_f * m_f) + (b_s * m_s)}$$

Figure 9-17: W/C calculation

whereby:

w_s: Water quantity of the silicate
w_z: Water quantity of the admixture
b_f: Binding factor of the admixture (in base data ->material data-> add materials)
m_f: Quantity of the admixture or max. portion in W/C value referred to the cement quantity (in the recipe / description)
b_s: Binding factor of the silicate (in base data -> material data-> add materials)
m_s: Quantity of the silicate solid or max. silicate proportion (11%, in base data -> material data-> add materials)

9.1.6.9.3 Mixer

If a plant is equipped with 2 mixers, the mixer to be used for production of the high strength concrete should be identified (configuration->plant->mixer: column "high strength concrete").

9.1.6.9.4 Production

At the start of production, the basic moisture of the aggregates is used for an advance calculation of the moisture. If this exceeds the requested water quantity, a corresponding error message appears offering a choice between aborting production or going ahead with the start. Production should not be started.

ATTENTION!

No manual dosing may be performed during production. Additional water can render the concrete unusable as a high strength concrete. There must be no manual flushing of the admixture drainage lines during production. Flushing may only be carried out after the completion of production and after the mixer has been emptied.

9.1.6.9.4.1 Moisture measurement

The moisture measurement is the critical part with high strength concrete. The moisture measuring unit must be calibrated with the aid of dried samples. The results of the dried samples must be entered in the materials table as the basic moisture and logged in a separate protocol.

Test: Start moisture measurement at 50 kg and stop moisture measurement at 150-180 kg

If the sand moisture value after the automatic measurement is greater than the requested quantity of the fresh water, an error message appears. The water dosing is blocked. By acknowledging the error message, it is possible to release the fresh water dosing. Alternatively, production must be aborted.

9.1.6.9.4.2 Water weigher

The water weigher is checked before the start of production. If the weigher value of the water weigher is two graduation marks in the negative range, the error message “water weigher not zero” appears at the start of dosing. The weigher must then be tared manually. Dosing begins after the error message is acknowledged

It is not possible to stop the water during dosing into the weigher or during emptying of the weigher.

Manual water correction is not possible.

9.1.6.9.4.3 Delivery note

In the case of high strength concrete, the delivery note is automatically printed out with weigher values. The concrete group is designated with B II. The delivery note must be examined after every production.

In the case of high strength concrete, the weigher value of the micro-silicate is printed out on the delivery note instead of the fine material in the recycled water. Instead of the component 3 of the admixture weigher 1, the component 1 of the admixture weigher 2 is printed out. The water content of the admixture for every batch is printed out on the protocol.

9.1.7 Material management

All materials required for production are managed under the material management. Each material is assigned to a material group and this in turn is finally assigned to a weigher. The materials are assigned to the silos and the pumps in the plant configuration.

The supplier management and the booking-in or the material deliveries are also in the material management.

9.1.7.1 Materials

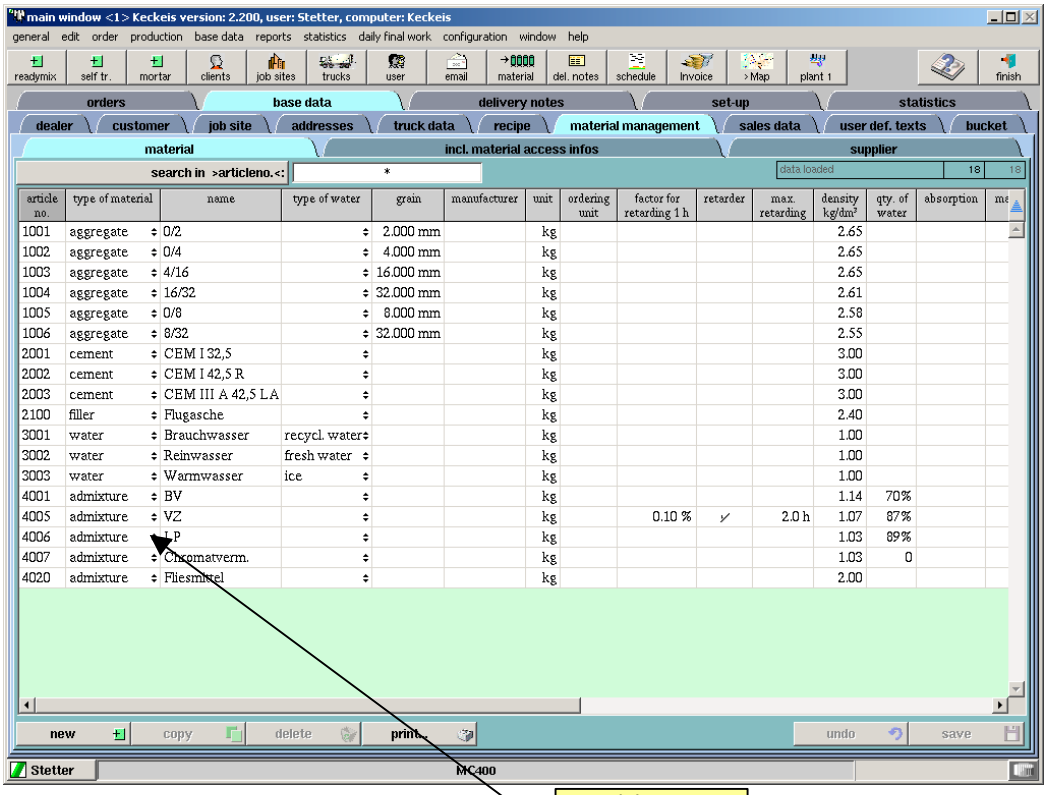


Figure 9-18: List of materials

article no.: The article number must be unambiguous. No two materials with the same article number may exist. The article number is used, among other things, to compile the material consumption statistics.

type of material: Every material is assigned to a material type. The material type normally conceals a weigher.

name: This is the designation of the material. It appears in the plant schematic, in the recipe and of course also on the delivery note.

grain: This information is only possible for aggregates. The largest grain is automatically determined in the recipe from the grain size.

manufacturer: The manufacturer of the material.

unit: The unit is given in kg or in ltr. It appears wherever the material is used.

factor for retarding 1h: This value is only possible with the admixtures. If an admixture is a retarder, it can be stated here which percentage quantity referred to the quantity of cement is necessary in order to achieve retarding for 1 hour.

Calculation of the delay time is performed automatically. When the recipe is changed in the order, only the required retarding time in hours is still given. The amount of the retarder is then calculated.

maximum retarding: This value is only possible with the admixtures.

The entered value is a limitation of the input of the retarding time when changing the mix design in the order.

density: The density is required for the material space calculation in the recipe. In addition, the fine particles of the recycled water are determined from the recycled water density. The recycled water density can also be changed in the daily set-up data (menu point “configuration->daily set-up data“).

liquid: This information is required especially in the case of the admixtures. If an admixture is liquid, a quantity (> 3%) is included in the calculation of the w/c value.

binding factor: This applies only to the binders (cement and admixtures). The binding factor is a factor by which the binder quantity is multiplied when calculating the w/c value.

additional dosing: Only possible for cements and fillers.

A value between 0 and 100% can be entered here. Additional dosing of this material automatically occurs during production.

This can be important if, due to a cement being of a lower quality, more cement is needed.

9.1.7.2 Material deliveries

The material delivery function is management of the material deliveries. When a material is delivered, the stock must be adjusted. This is done via details of the supplier, his delivery note number and the quantity. Of course, the date and time of the delivery are saved.

A statistic can later be called up about the delivered materials.

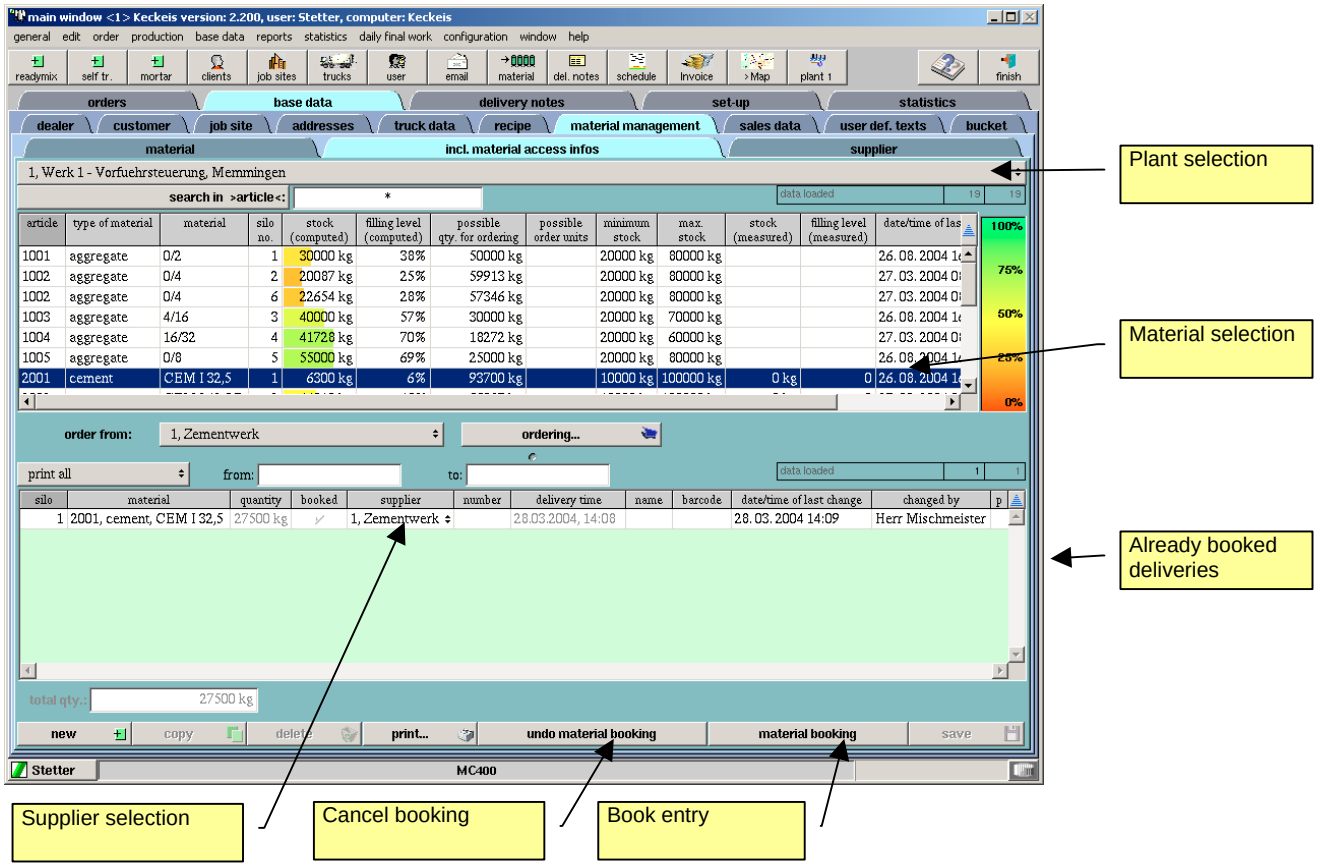


Figure 9-19: Material delivery

The following steps are necessary to book a material delivery:

- Select plant if several plants are being managed.
- Select material (pay attention to the silo number)
- A new record is created with the “new” button. The material is entered automatically. The silo field cannot be changed. This serves as a notice.
- Enter quantity
- Select supplier via the selection button (optional). If a supplier does not yet exist, he can be created via the “supplier” button.
- Enter delivery note number (optional)
- Press the “material booking” button. The entered quantity is then added to the stock.

Several delivery records can also be created and only saved. Later, the data that has still not been booked can be marked and completed together with the “material “booking” button. Incorrectly booked entries are cancelled with the “undo material booking” button.

9.1.7.3 Supplier

The list of suppliers can be found here. It is basically a list of addresses. The notice is only for information and has no further meaning.

9.1.8 Distributor

The concrete distributor is designated as the distributor. It can be a company or a person. The distributors entered here appear for the customers in the selection button for the distributors. In the customers, a customer can be assigned to a distributor. The assignment can also be made via the order management.

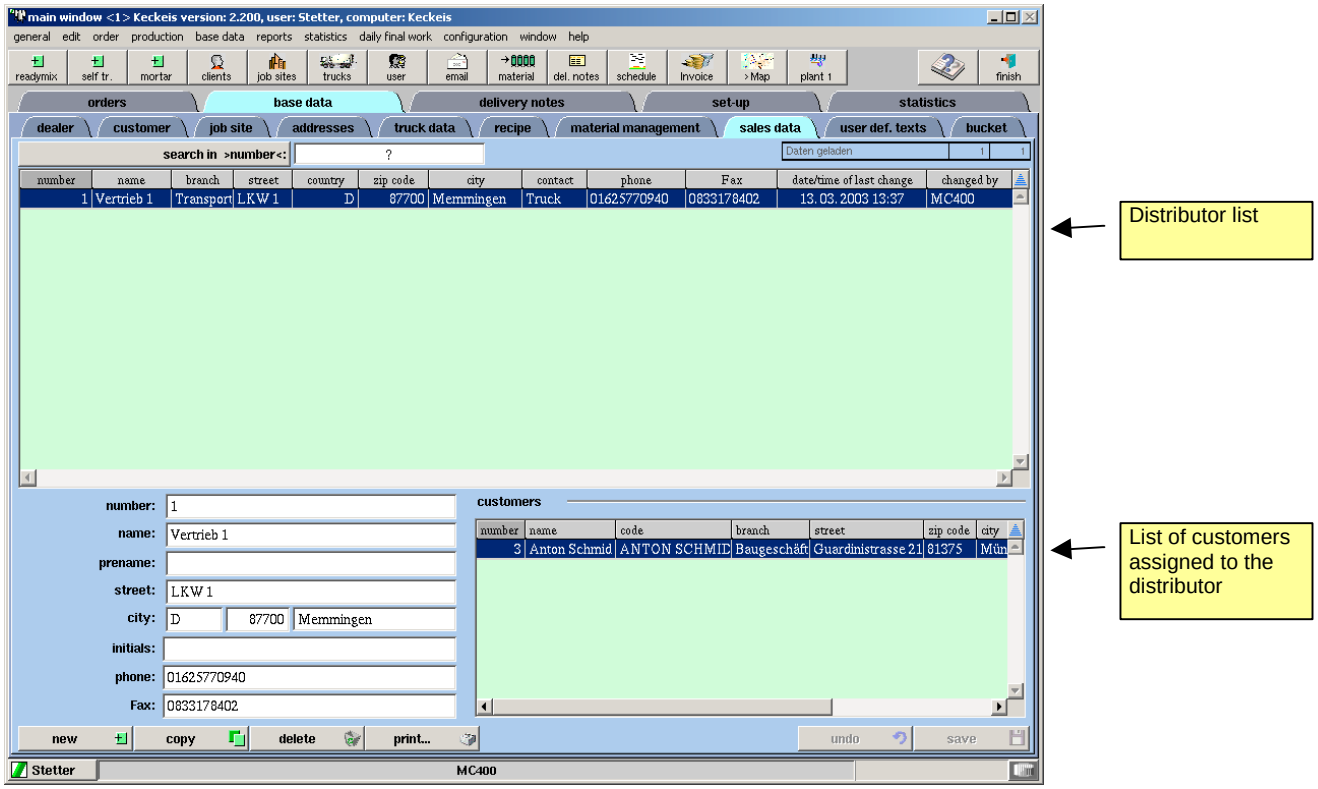


Figure 9-20: Distributors

9.1.9 User texts

Texts such as special services, characteristics of concrete, notice texts etc. are brought together under the heading user texts. The texts can be selected when the order is compiled or for recipes. As many as are required of all text types can be saved in the database.

9.1.9.1 Alarm texts

This function is not yet installed.

9.1.9.2 Phases of construction

Phases of construction can be selected for the job sites. The phases of construction serve only for information. They have no special meaning.

9.1.9.3 Characteristics

Characteristics are required to describe the recipes. They are assigned to the recipes when the recipes are compiled. They also appear on the delivery note. As many characteristic texts as are required can be selected for a recipe. However, only the first three of these are printed on the delivery note. Example: “reinforced concrete”, “steel fibre concrete” etc.

9.1.9.4 Types of unloading

The types of unloading contain the unloading speeds. These are required for calculating the productions. The unloading speeds are identified by a name and contain the quantity that can be unloaded at the job site per hour.

When the job site is entered, a type of unloading is pre-assigned, but this can be corrected when the order is being processed.

If the “enable statistics“ column is marked, the relevant type of unloading appears in the type of unloading statistics.

If at a later time you want to compile a statistic about the quantities pumped by your pumps, compile the types of unloading with the name of the pumps and mark “enable statistics“. Via the types of unloading statistics (see statistics) you obtain the quantities and optionally the deliveries for these types of unloading (here the pumps).

Tip 9-8: Possible pump statistics on the type of unloading

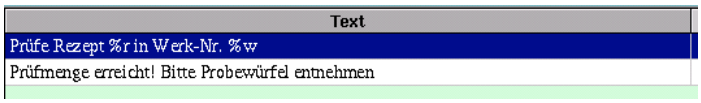
9.1.9.5 Notices

Notice texts are selected when the order is compiled. They are printed out on the delivery note. One notice text per order is possible.

9.1.9.6 Hints for recipe test

Under the test texts you will find the texts that can be selected for the test protocols (->recipes).

Examples include:

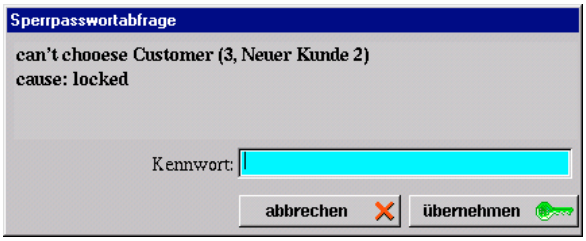


9.1.9.7 Embargo texts

MC400 allows as many embargo and warning texts as required, which are assigned to the customers, the job sites or the recipes. The warning texts issue a warning before the start of production. The embargo texts on the other hand prevent production.

The embargo texts can be issued with a password that must be entered for release.

For example, if this embargo text is assigned to a customer in the base data (because the last bill was not paid), a message appears if a new order is created and when production for this order starts



This message can be bypassed with a password.

If in the case of an embargo text you put a tick in the “Warning” column with the mouse, only one message appears that you must confirm with ENTER.

Embargo texts can be applied to recipes. If the person responsible for the recipe defines that a particular recipe may not be produced, he blocks this recipe with an appropriate text and thereby prevents production. This is particularly interesting in the case of network workstations.

Tip 9-9: Prevent the production of a recipe via embargo texts.

9.1.9.8 Advertising texts

The advertising texts are plant-related and are therefore selected for the plant description (configuration->plants->address). They are printed out with the delivery note.

9.1.9.9 Special services

The special services can also be selected with an order. The special services cover all additional services that are calculated. Up to four special services can be defined for an order.

9.2 Order processing

Under the “orders” tab, you can create three different types of orders. Possibilities exist for “ready mix concrete”, “self transporting” and “mortar”. The “combined mortar orders” tab is necessary for mortar production.

The tabs of the three order types are of a very similar structure. The only differences are where particular characteristics are required / not required for an order.

An order covers the total quantity that was ordered for a job site. If all the necessary data is available, the deliveries are planned. This means that the necessary productions are prepared, depending on the available trucks and plants, the driving times to the job site, the unloading speed at the job site and the total quantity.

The planned productions appear in the list in the plant schematic. The planning is not definitive, it is just a suggestion of the system.

9.2.1 Creating a new order and changing an order

Like all new data, a new blank record is created with the “new” button. In the case of the most important fields of the detail area such as dealer, customer, job site .., a selection window is automatically opened when the field is marked for an entry (turquoise background).

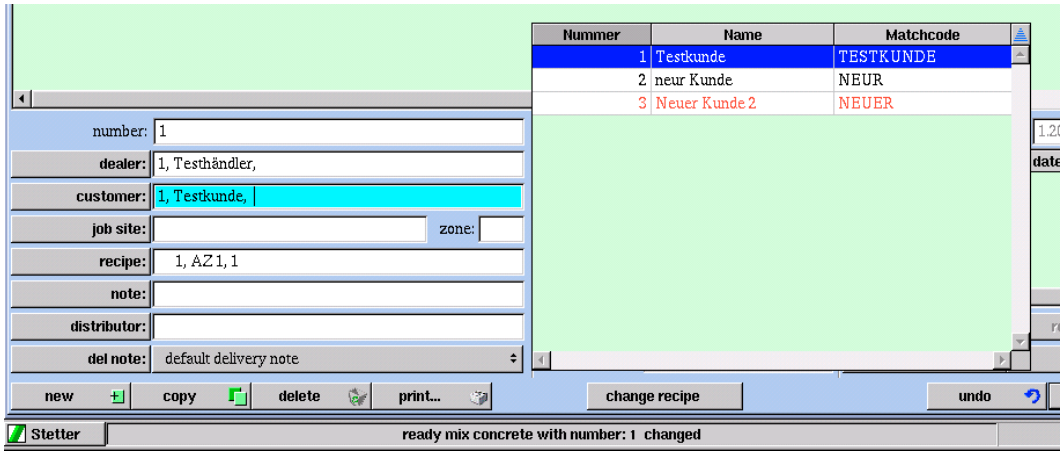


Figure 9-21: Order processing

Additional services can optionally be selected for an order. These are printed out on the delivery note. In the dialog “daily set-up data“ it is possible to select as standard up to 4 additional services for creating new orders. These are then automatically inserted with new orders. Examples include “Saturday delivery” or “Night surcharge “.

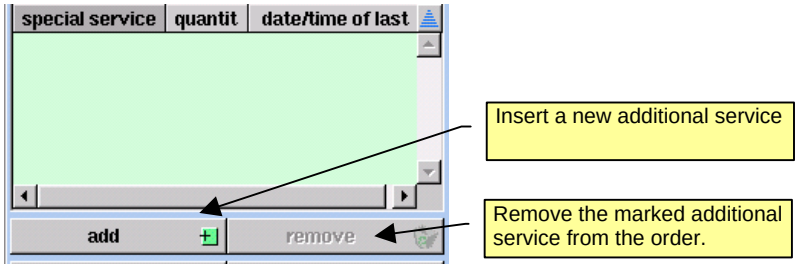


Figure 9-22: Add additional services to the order

If an important detail has been overlooked before the order is saved, this is indicated by a message.

If the planning has been successful, the message “scheduled” is assigned to the selected order in the “Status” column

If the planning was faulty, the message “error in scheduling“ is assigned to the selected order in the “Status” column. You can then open an error list with the “protocol” button.

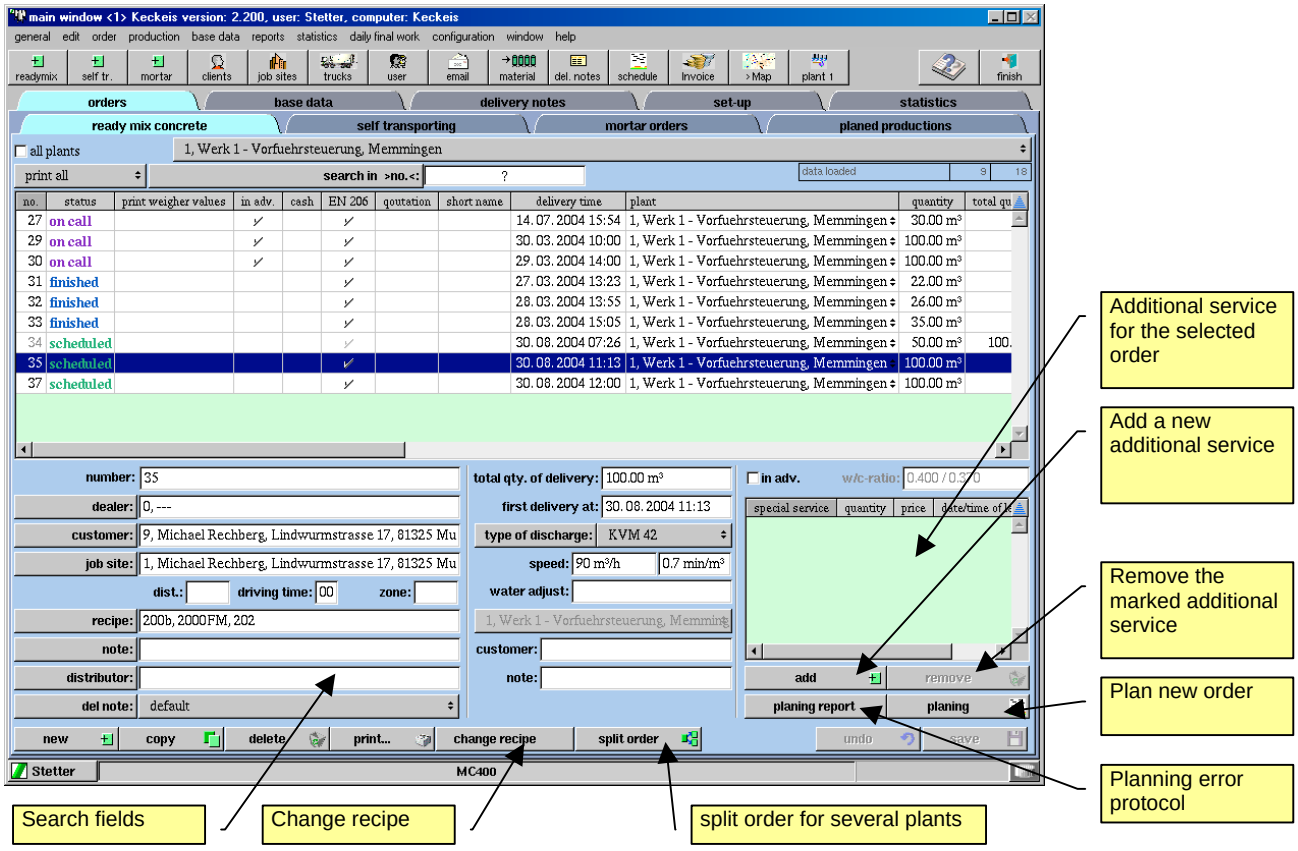


Figure 9-23: Ready mix concrete order

new: A new order is compiled

copy: Copying an order

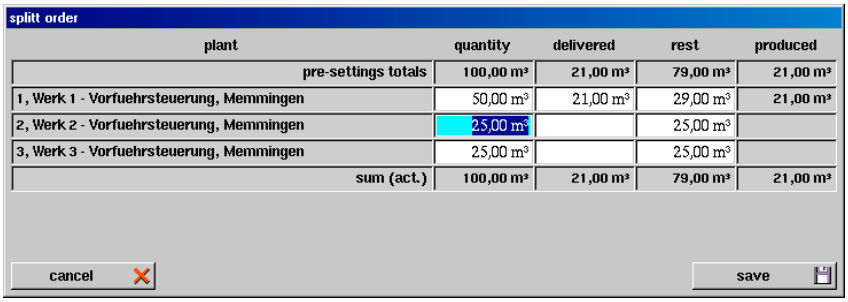
delete: Delete an order

print...: An assistant for printing orders is opened. Here it is possible to call various reports that relate to the order.

change recipe: The selected recipe can be changed within certain limits. This relates to the cement quantity (additional cement) or the admixture (e.g.: retarder). The recipe changes apply to all productions for this order. Recipe changes of an individual production can be carried out via the planned productions.

If a change has been made to the recipe, a red tick appears on this button.

split order: This button is active optional. An order can be splitted to be produced in different plants



type of unloading: The unloading speed at the job site is determined from this. This is necessary for planning the productions. The type of unloading is taken from the job site data, but can be changed for the order.

planing: So that an order can be produced, this must also be planned in. If you have entered all data of an order, you can press the “plan” button instead of the “save” button. An automatic save starts, followed by planning in of the order. You can follow the progress of the planning in a window.

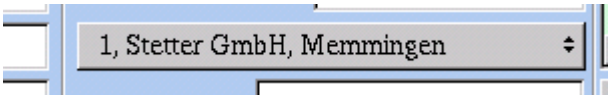
print weigher values: The batch values are also printed when the delivery note is printed out.

in adv.: The order is not automatically planned during saving.

search fields: As soon as a search field is active, a list appears with the entries for this field. The chosen record can be selected from this list. The list is restricted with each input of one or more letters or a number. Only the entries that contain these letters appear. The more text that is entered in the search field, the shorter the list of data found becomes.

The required record is transferred to the order with the ENTER key or with a simple mouse click. Colour-coded data means that it contains an embargo code. Yellow means that a warning is involved and red is an embargo. Red texts cannot be transferred to the order.

plant selection: If MC400 controls several plants, a selection window for the plant appears.



The selected plant is taken into account in the planning. If there is a blank entry here or if the plant 0 is selected, the order is planned for all plants. This means that several plants are producing for an order.

Orders for which the deliveries are not yet clear can be marked as advance orders. The order is then not automatically planned. The marking is in the form of a tick in the ”in adv.“ column.

Tip 9-10: Advance orders

9.2.2 Change recipe data

The changes made here concern the entire order. For example, if additional cement is entered, this applies to every production from this order. However, if the recipe should be changed for only one delivery, this must occur in this delivery.

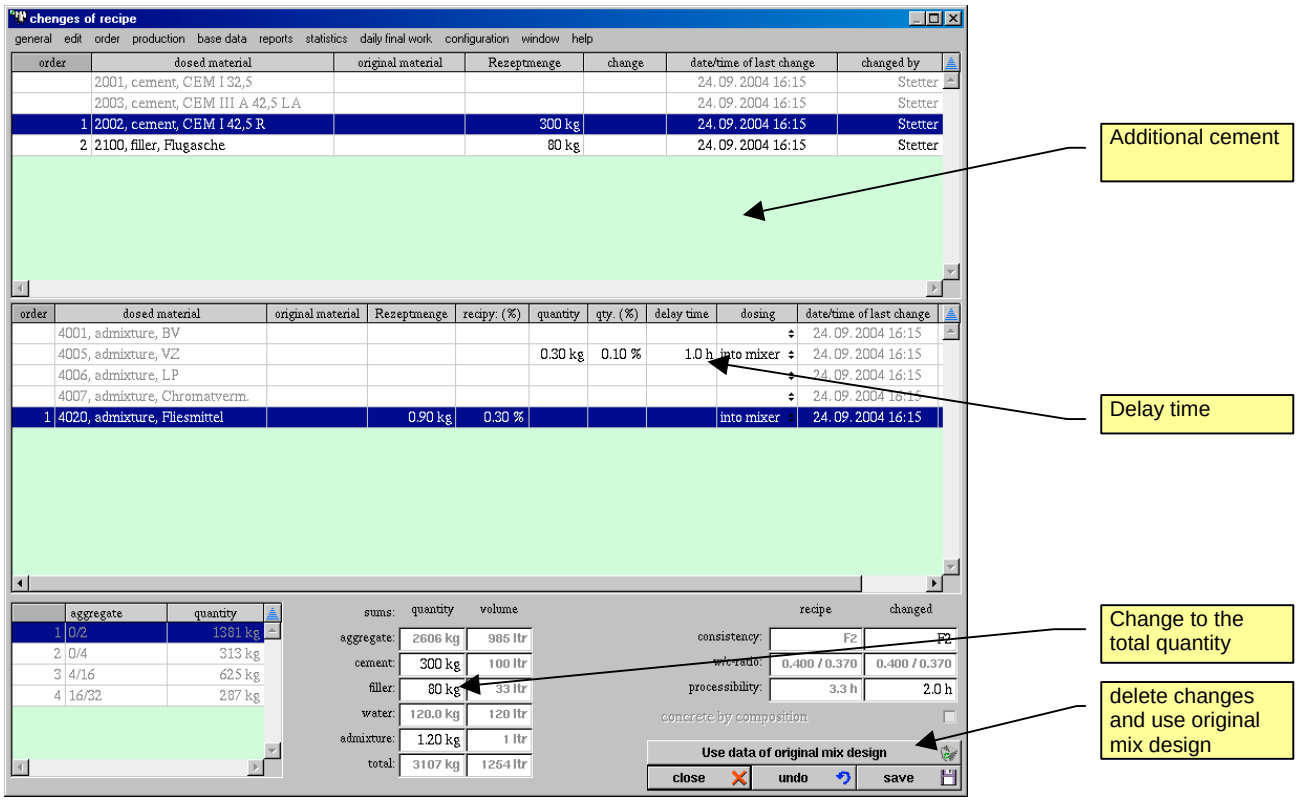


Figure 9-24: Recipe change for an order

All quantities are referred to 1 m³.

additional cement: The change is added to the quantity in the recipe. Negative values are also possible.

admixture: Changes to the admixture overwrite the quantities in the recipe for this order. The quantity can be entered in absolute or relative terms. The relative quantity refers to the total cement quantity.

If a conversion factor has been entered for the delay time in the case of the materials and there for the admixtures, the delay time can be entered in hours. The required quantity is then calculated.

total quantities: The total quantity can also be changed for every material type. The division of the individual quantities for the materials involved is then calculated proportionately.

If no quantities can be entered, this is due to the input limits that were set for current user group.

If you want to prevent the recipe being changed via the order, set the input limits for the relevant user groups.

Tip 9-11: No recipe changes possible.

If you want to change a cement for an order, mark the cement that is required by the recipe (black lettering, the others are grey) and press the right mouse button. All the available cement types now appear in a menu. If you select a different cement here, this applies to the current order.

The other materials (filler, admixture) can also be changed.

ATTENTION:

Make sure that the changed material has the necessary characteristics.

Stetter GmbH cannot accept any liability if you change the cement type and the concrete then does not reach the required strength. Material characteristics are not examined.

Tip 9-12: Exchange material via the order / recipe changes.

9.2.3 Ready mix concrete

These are the standard orders for concrete. Normally, an order consists of several deliveries. A delivery means one production and one truck. The required deliveries are automatically planned.

9.2.4 Self transporting

This order type is intended for self-transporters. Of course, orders for self-transporters can also be compiled via the ready mix concrete orders. However, for self-transporters it is recommended to use the special order type. Separate statistics can be compiled for self-transporters.

The crucial difference to ready mix concrete orders is that only one production order is compiled for an order. The truck number can also be changed in the case of the truck.

9.2.5 Mortar orders

Mortar orders are recorded here. Mortar orders differ from ready mix concrete orders in that normally, several mortar orders can be combined into one production order. The resulting combined mortar order is then produced for a truck. The delivery note can be printed out immediately for each mortar order. If this still has not been done by the start of production, the delivery notes are automatically printed out at the start of production.

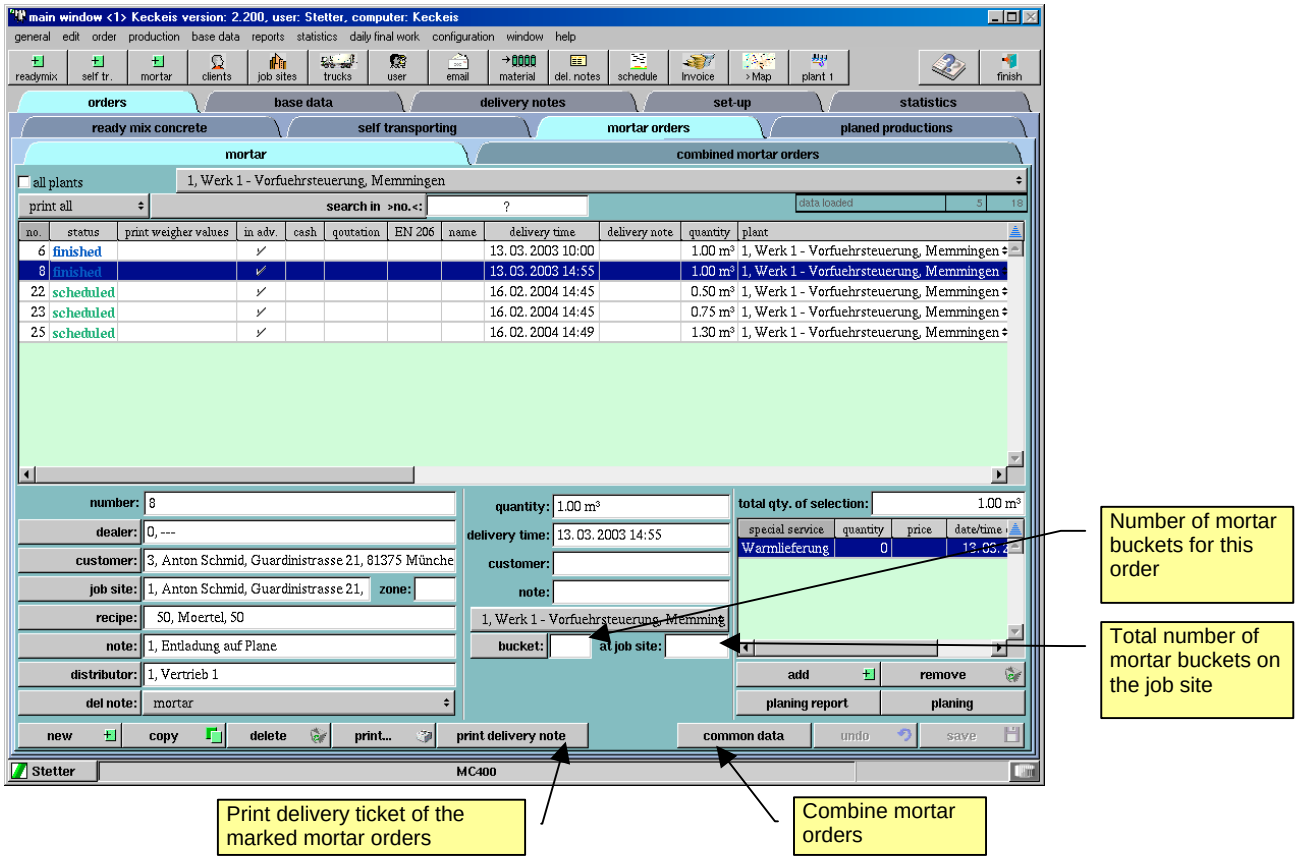
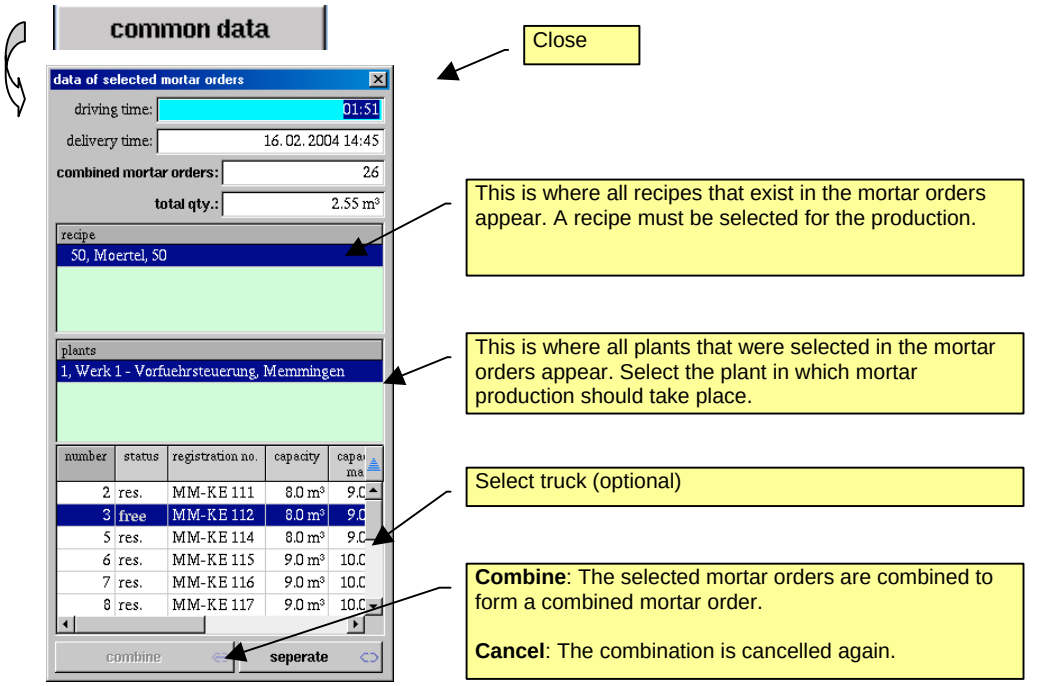


Figure 9-25: Mortar orders

status: If new mortar orders have been compiled and saved, the status “error when planing” appears. In this case this means that the mortar orders have not yet been combined in a combined mortar order.

delivery note: print: The delivery notes of the marked mortar orders are printed out. The delivery note printer set in the options is used here.

common data: If you create mortar orders, a combined mortar order must in any case be compiled from these orders, even if you have only created one single order. This is done with the “common data” button.



When a mortar order is selected, all orders associated with this combined order are marked.

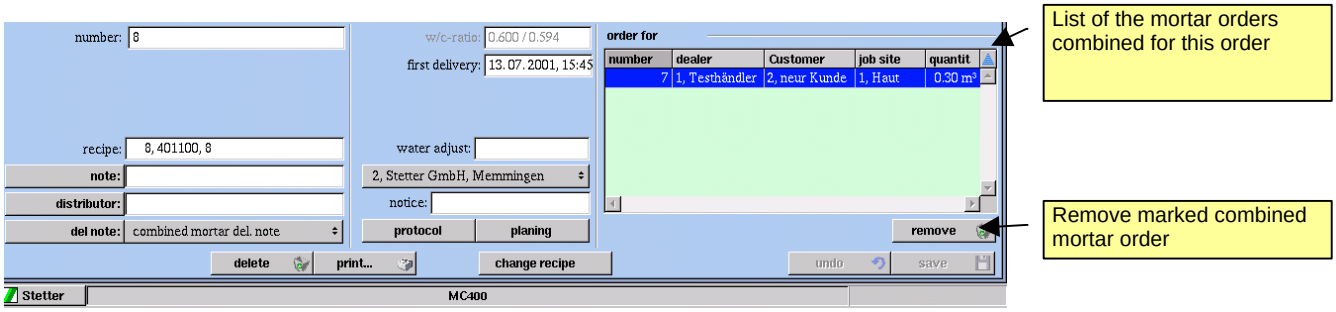


Figure 9-26: Combined mortar orders

9.3 From the order to production

If MC400 has several monitors, the program shows the main window on one monitor and the plant schematic on another monitor. An order can be selected in the order list. In the production list, the next production planned for this order is automatically selected.

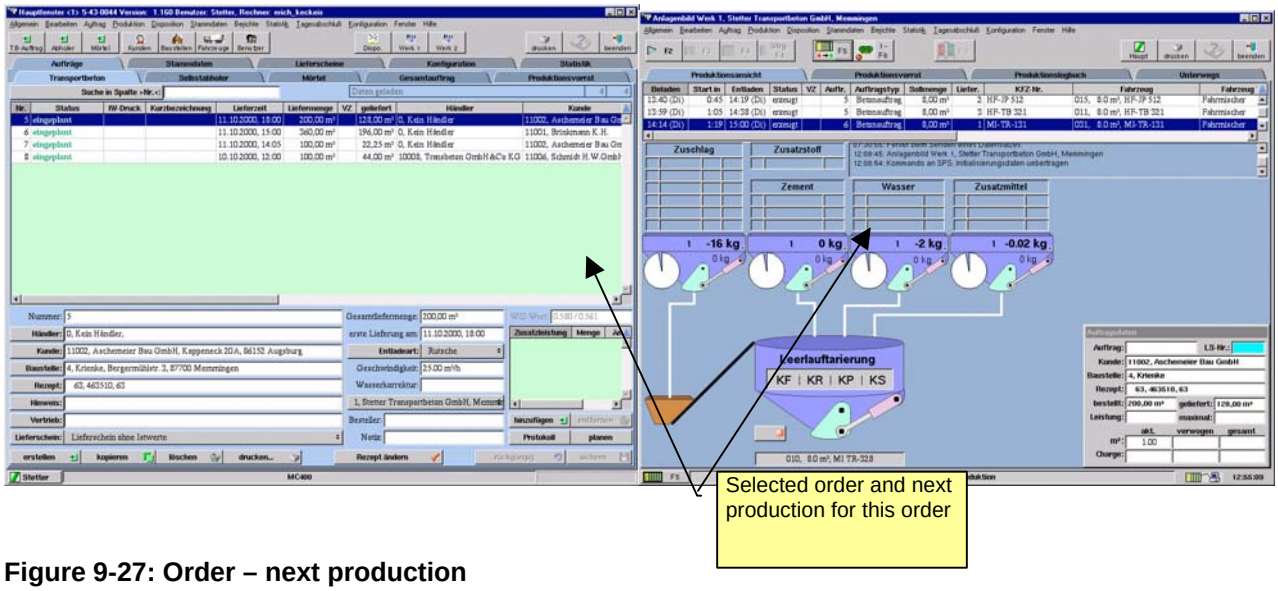


Figure 9-27: Order – next production

The plant schematic must be selected next. This is done by

- pressing the button 

- or clicking on the title line or a free field in the plant schematic
- or pressing the key F10

If the plant schematic is active, this can be identified by the blue title line and production can be started with the key F2. The quickest way is to click directly on the button F2 in the plant schematic.

10 Delivery notes

Under the tab you will find all delivery notes. There is a separate tab for every order type. This simplifies the overview

So that not all delivery notes are listed, it is first necessary to select the plant and then the time range.

Changes to the delivery note generate a copy of the delivery note. The version number is increased at the same time. Only delivery notes with the highest version number can be edited.

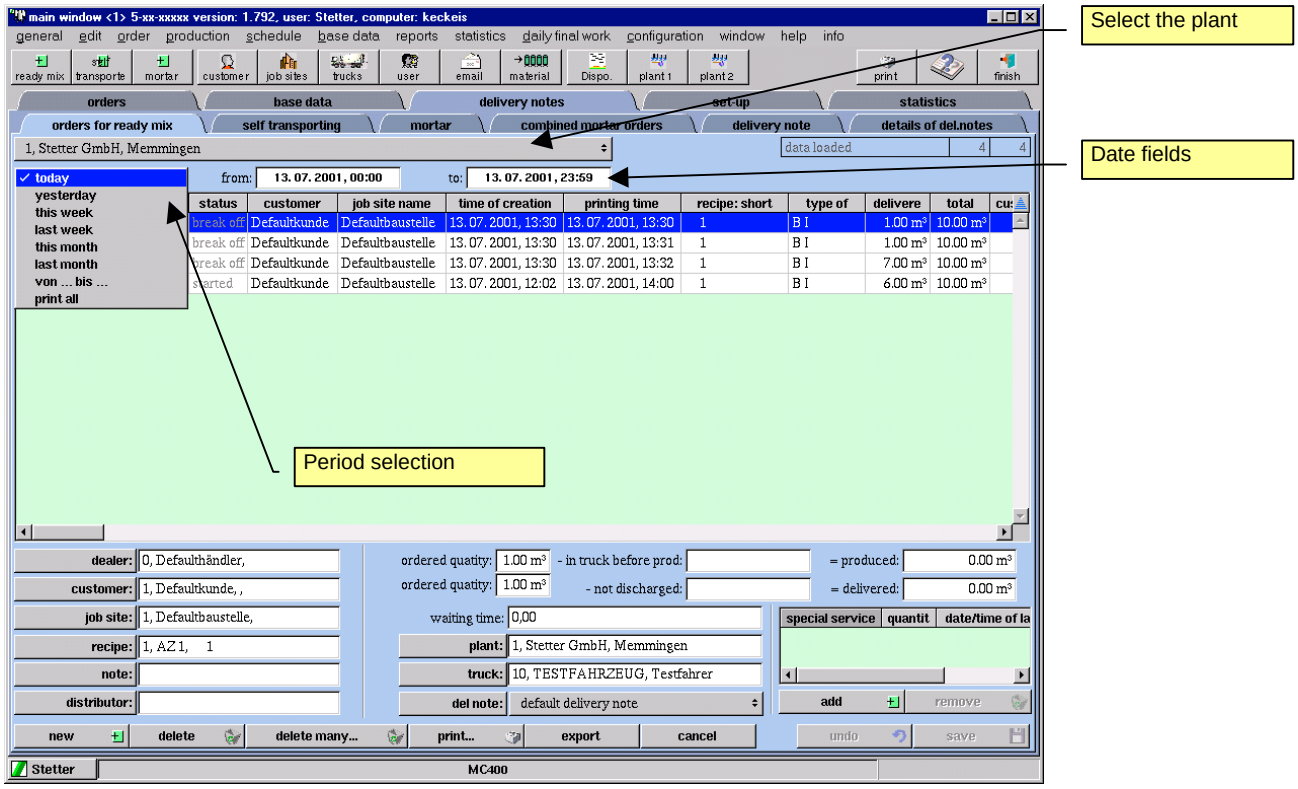


Figure 10-1: Editing delivery notes

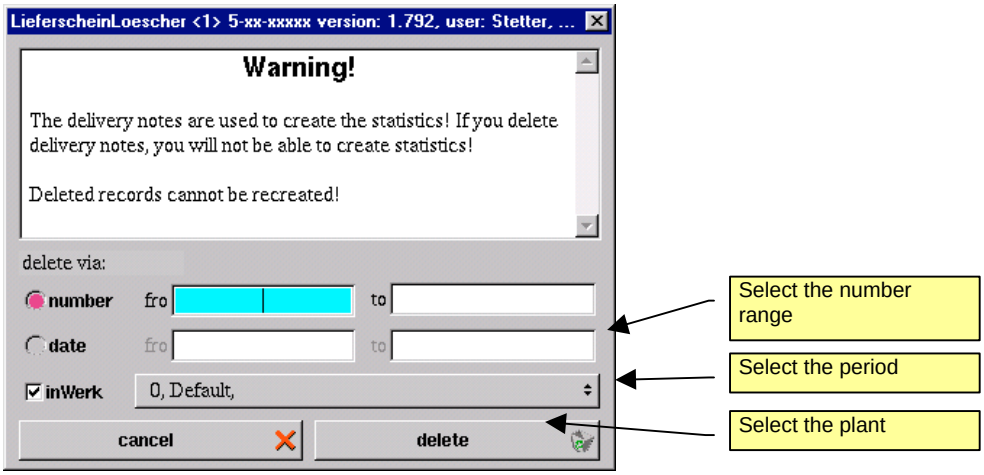
new: New delivery notes are compiled.

delete: **ATTENTION**

All statistical data (material consumption, customer statistics etc.) is compiled from the delivery note data. If you delete delivery notes, this data is no longer available and therefore cannot be taken into account in the statistics. Before deleting, we urgently recommend that you save the data. (Menu point "General – back-up database ")

Deleting is only possible if the user group to which you belong is authorised to do this

delete many…: Via a dialog you can delete delivery notes of a particular plant or of all plants. When doing this, it is possible to state the time range or the number range.



export: The marked delivery notes are exported. This means that the data is written to text files. The format is set in the options. The text files can then be processed further by other programs such as billing programs.

print: An assistant is started, via which you can call up various reports. Here you can also reprint a delivery note.

Via the print assistant it is also possible to call up protocols and statistics.

cancel: When a delivery note is cancelled, the quantities are not taken into account in the case of various statistics.

plant: Here you select the plant of which you want to edit the delivery notes.

date range: We have pre-assigned various time ranges in order to save you the work involved in entering them. However, individual limits can also be entered.

Entries such as “yesterday”, “”last Saturday” or “last Saturday morning” are also possible in the date fields.

To reprint a delivery note, mark the corresponding delivery note and press the right mouse button. You can select the menu point “print delivery note” in a menu.

Tip 10-1: Reprinting a delivery note

To reprint a protocol, mark the corresponding delivery note and press the right mouse button. You can select the menu point “print protocol” in a menu.

Tip 10-2: Reprinting a protocol

10.1 Ready mix concrete delivery notes

Only delivery notes of the produced ready mix concrete orders are listed here.

10.2 Self transporting delivery notes

Only delivery notes of the produced self transporting orders are listed here.

10.3 Mortar delivery notes

Only mortar delivery notes are listed here.

10.4 Combined mortar orders

Only delivery notes of combined mortar orders are listed here.

10.5 All delivery notes

All delivery notes, irrespective of the order type, are listed here.

10.6 Delivery note details

Details of the batches, the weighed materials etc. can be determined here. This function was conceived for service and diagnosis purposes.

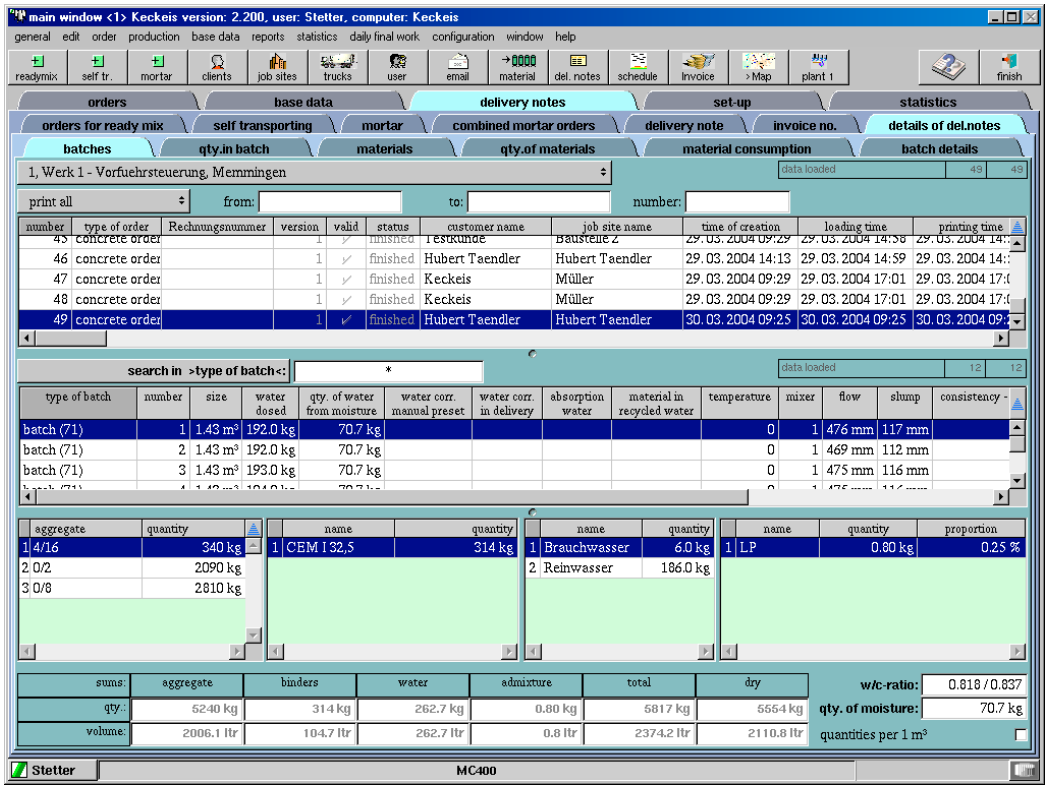


Figure 10-2: Delivery note details

10.7 Exporting delivery note data

Export may be necessary for further processing the delivery note data. Export means that the delivery notes are written into files. The data format can be set in the options. These can then be read by other programs (e.g. billing programs). The transfer between the programs can take place via a diskette, a network, or a telephone line.

It is important to define the format during configuration. The evaluated programs must be adapted to the format. It is best to define which format you will use in collaboration with Stetter GmbH and the manufacturer of the billing program. The already available formats are described in the appendix. Please consult us if you have any questions or if you need another format.

There are different possibilities for exporting data.

The most common one is to export to a file all delivery notes from one day. The file is named in *LSddmmyy.ext*. The name contains the date, and the extension depends on the format used.

Example: LS150300.ST6

Another one is to compile a file for each delivery note immediately following production. The name then contains the delivery note number.

Example: LP0123456.ST6

In this case, the file can be processed after production.

10.7.1 Setting the export format

This is done via the menu point “General->Options“ and here the tab “formats”

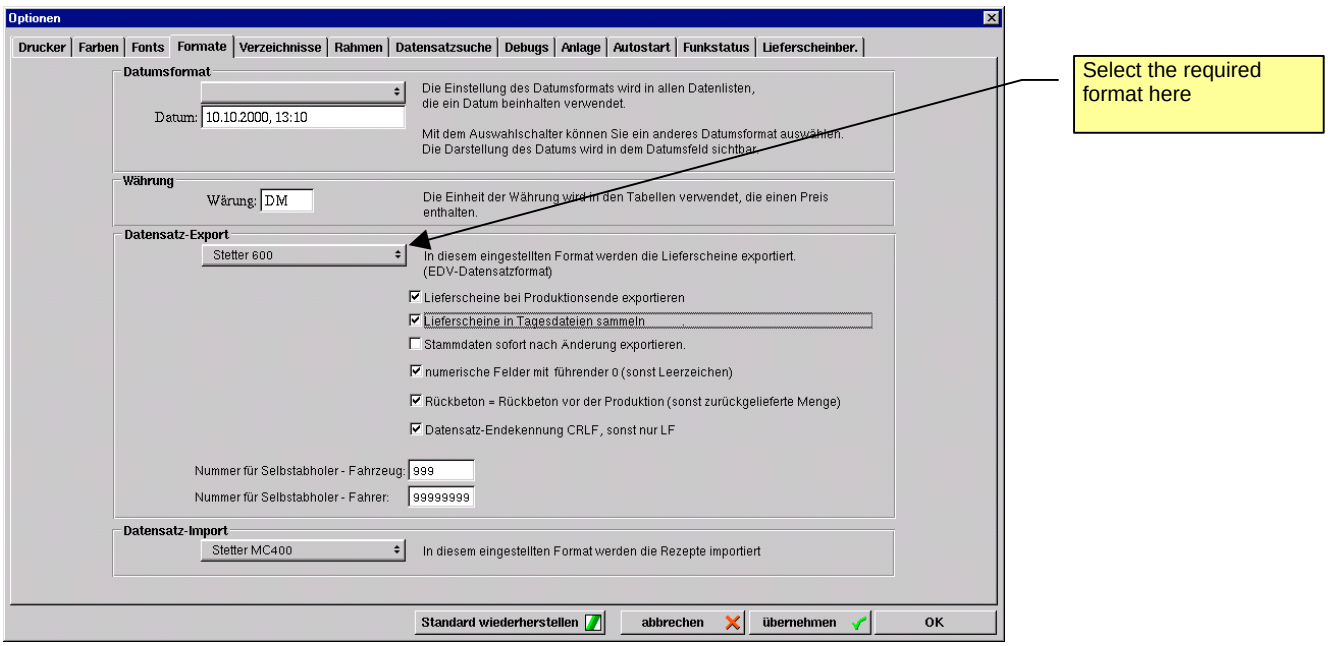


Figure 10-3: Set format for exporting the delivery notes

export delivery data with the end of production:	The delivery note data is exported after every production. The data is saved in the directory “copy production data to“ under “directories“.
export delivery data of one day into one file:	All exported delivery note data is collected in a file. The file name is derived from the date. If this field is not marked, a separate file with the delivery note number is created as the file name for each delivery note.

10.7.2 Export delivery notes on a daily basis

Delivery notes can be exported for transferring to billing programs. The format of the compiled export records is set under “General->Options->Formats“.

The following dialog is opened with the menu point: “General->Export delivery notes“:

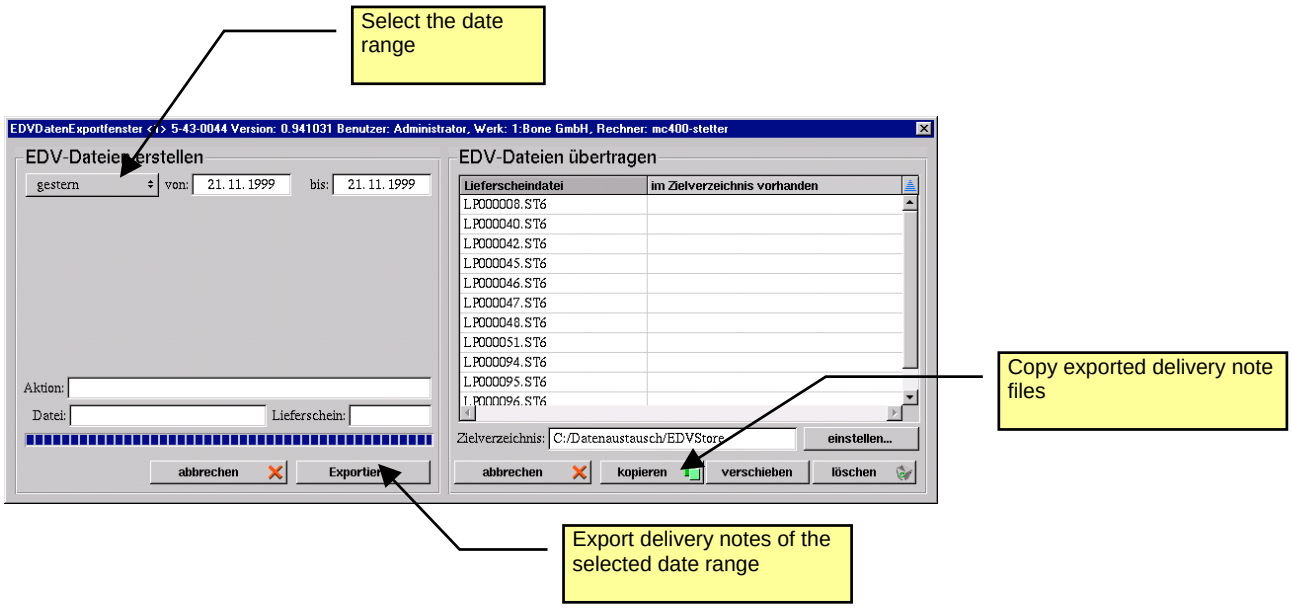


Figure 10-4: Delivery note export

With the aid of the “export” button, files are created that contain the delivery notes. A separate file is created here for every day. The target path is defined under “General->Options->Paths“.

For the directory in which the export files are created there is a target directory for transferring them to the billing. It can be the drive A: (diskette) or any directory in the Windows network.

All marked files are copied to the target directory with the “copy” button.

11 Production

The production area consists of four tabs. The most important tab is the “plant schematic“ tab. In this window it is possible to carry out and observe the entire production. The other tabs are “scheduled production“, “logbook” and “on the road“.

11.1 Plant schematic

11.1.1 Structure of the plant schematic

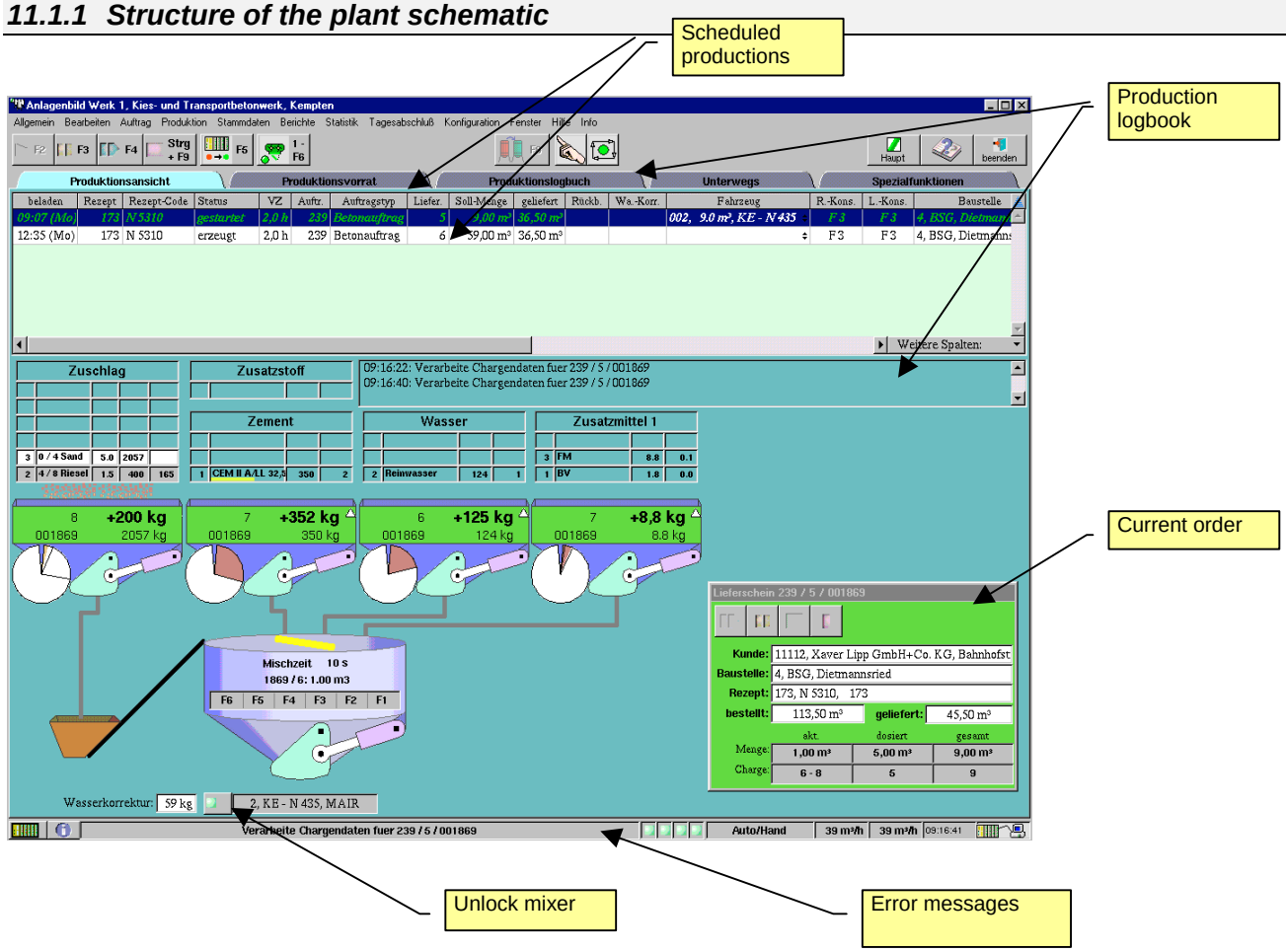


Figure 11-1: Plant schematic

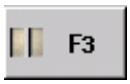
11.1.2 Description

To be able to produce an order, it must first be selected with the mouse as the first one in the list of scheduled orders. Clicking with the mouse on the button F2 starts the order. There is an automatic production sequence. To complete the order, the production data is saved and a delivery note is printed.

The required quantity can be changed later in the column “required quantity“.

11.1.3 Meaning of the function keys in the plant schematic

Production of the selected order is started with the key “F2“. This button is active when a valid production order is selected and production is not running. In addition, the button is active when an ongoing production is stopped with F3.



The ongoing production can be stopped with the key “F3“.

An ongoing production can be aborted with the key “F4“, i.e. the production is cancelled, the weighers are **not** emptied. The current batch is **not** ended.

With the “Ctrl-F4“ key, the production is ended after the next possible batch. This means that the production can be ended prematurely without cancelling it.

Acknowledge production errors with the “F5“ key. Every error that appears in the status line must be acknowledged. The error is automatically entered in the production logbook. If the same error appears again after an acknowledgement, check the cause. Possible causes can be found in the list of production errors.

You can block / release the mixer outlets for mixer 1 with the “F6” key. The release must be made with the first batch of a production and is preserved until the end of production or until the key F6 is pressed again.

If you want to keep the mixer outlets in the half-open position, press F6 to release then quickly press F6 again to block.

The same applies to mixer 2 (F7)

Release an alternate silo with F8 if a silo becomes empty during production. The number of the alternate silo must be given in the silo data. When the silo is empty, an error message “dosing time exceeded“ appears. You can then decide whether the silo is really empty or whether a slowing material flow is involved.

11.1.4 Description of the weigher symbols and the material representation in the plant schematic

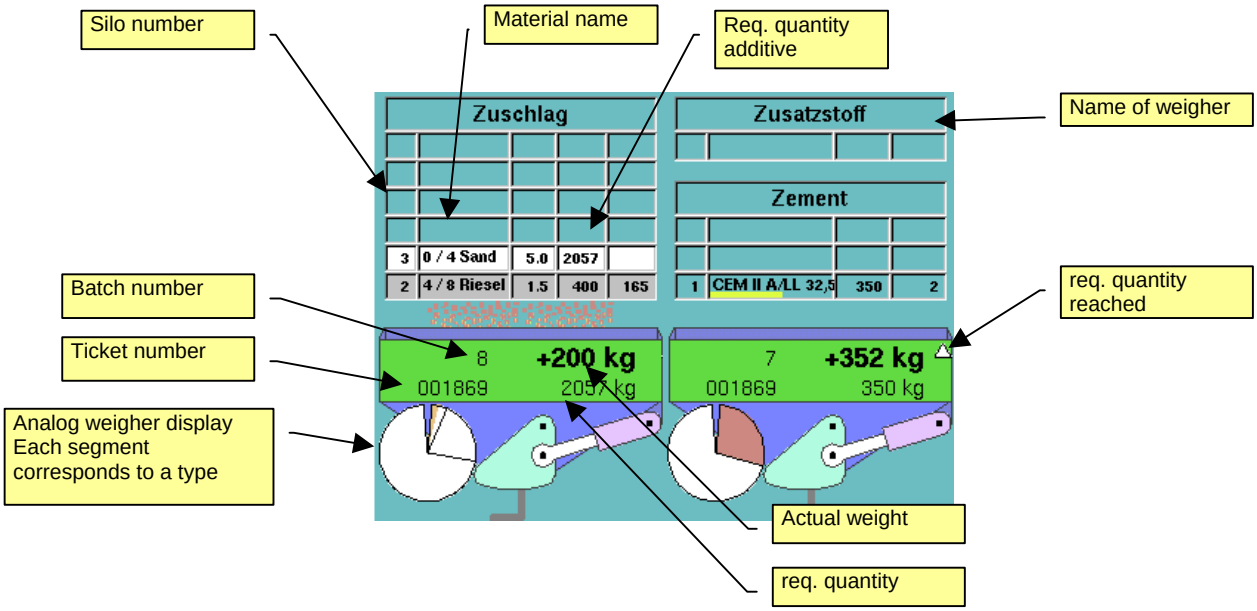
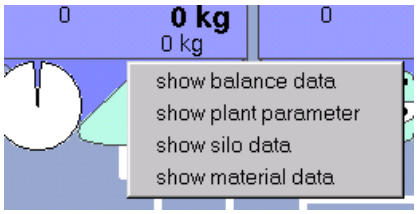


Figure 11-2: Weigher symbols and materials in the plant schematic

The picture elements are occupied with a menu for the right mouse button. It appears when you move the mouse pointer onto a weigher symbol and press the right mouse button. Another menu to deactivate the mixer appears with the mixer.



Tip 11-1: Quick change to the silo data, weigher data, plant parameter and material data

11.1.5 Description of the mixer symbol in the plant schematic

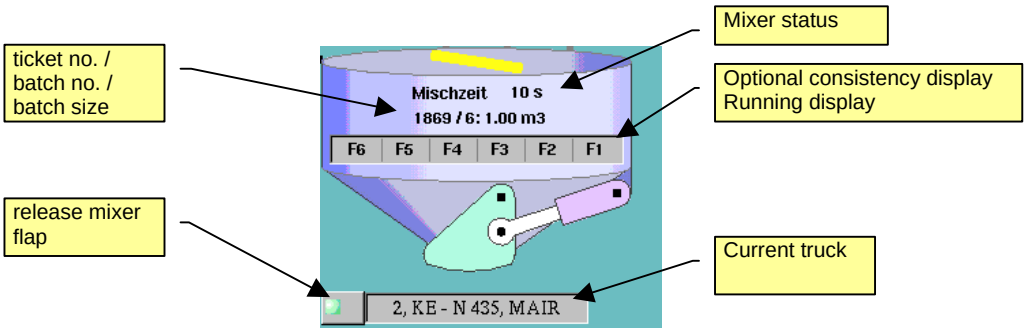


Figure 11-3: Mixer symbol in the plant schematic

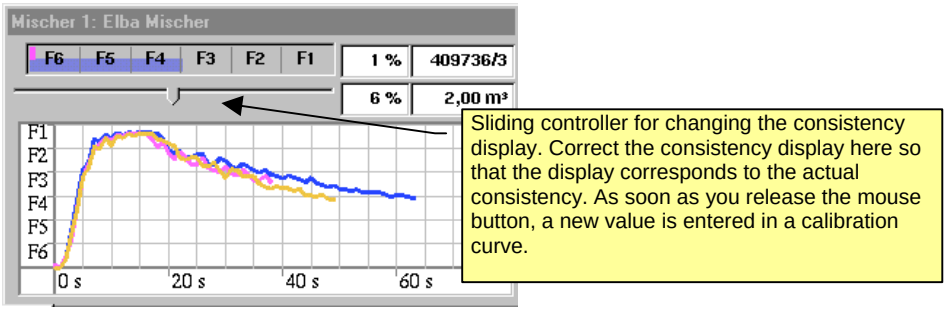
Move the mouse pointer to the mixer symbol and click the right mouse key. You will get a menu with the following items:

show mixer data The program changes to the main window and to the Configuration>Plant>Mixer tab.

show plant parameter The program changes to the main window and to the Configuration>Plant>Plant parameter tab

show consistency curve A diagram window is opened. This is where the curves of the individual batches are displayed.

The consistency curve (red) is displayed analogous to the present power consumption. The blue curve stops at the end of the mixing time (also see *Consistency setting*)



show calibration data for consistency measurement The program changes to the main window and to the configuration>plant >consistency calibration tab

deactivate mixer The mixer is deactivated. This means that no order can be started for this mixer. The mixer symbol turns grey. This can be particularly useful in the case of systems with two mixers.

11.1.6 Dealing with errors that occur during production

If errors occur during production, a message appears in the small logbook window. This message is displayed again on the bottom edge of the plant schematic window in a text field on a red background,

When you position the mouse pointer on the status line of the plant schematic, a description of the error appears as a short help text. This applies only to errors that occur during production.

A menu is opened with the right mouse button, offering you the possibility of changing to the list of all possible production error messages. There you will find additional information about the possible cause of the error and a possible remedy.

If there is an error, this is immediately selected after changing to the error list.

Tip 11-2: Quick change to the list of all possible error messages

11.2 Planned productions

Under the “planned productions” tab you obtain a more extensive overview of the orders still not completed. With the button “change recipe” it is possible to change the recipe materials before the start of production.

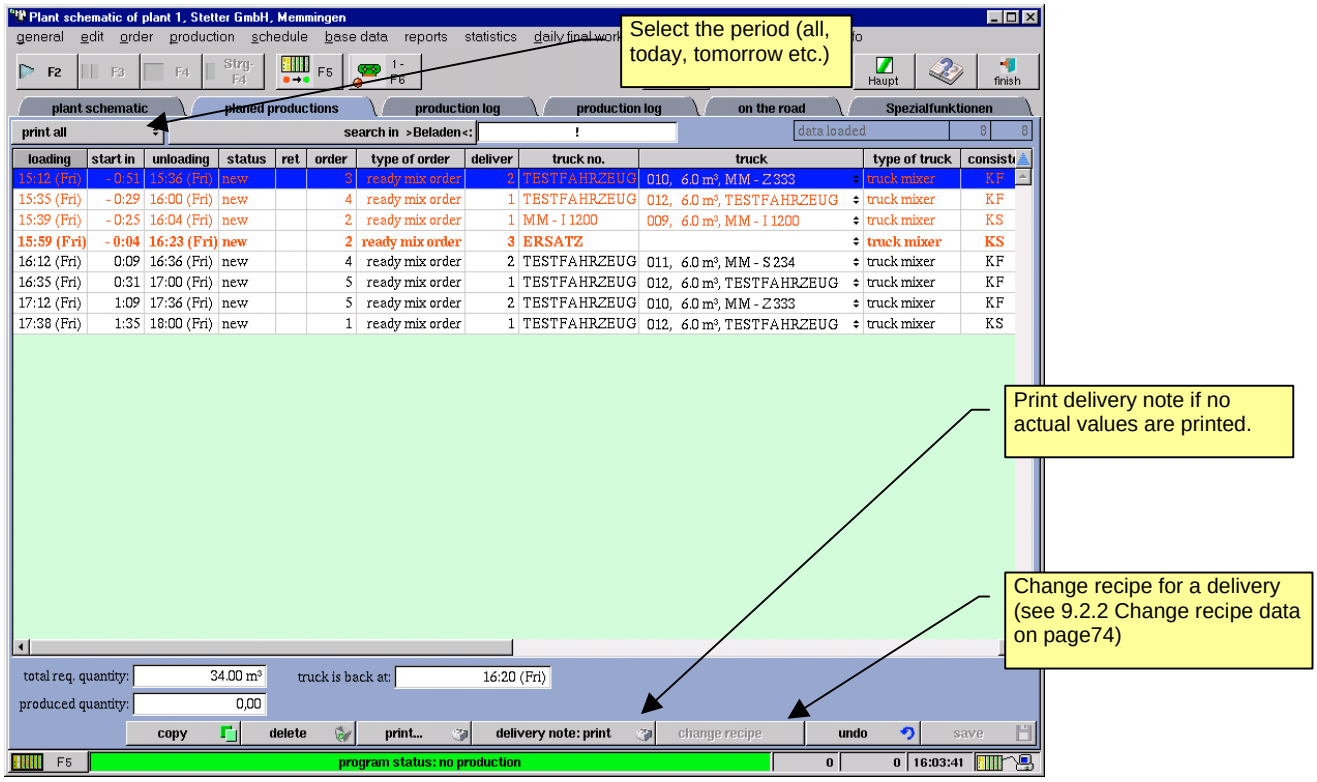


Figure 11-4: Planned productions

This list is compiled automatically when an order is planned. Double clicking on a production opens a selection window with the list of trucks. Here you can select another truck. The planned productions for the order are adapted automatically, i.e. if the previously entered truck is replaced by a smaller one, the load quantity of the last delivery is automatically increased provided that the corresponding truck permits this. If not, a new delivery is added.

By double clicking on the load quantity (req. quantity), the returned concrete or the water correction, it is possible to change the value directly. A change is automatically saved.

11.3 Production logbook

Under the logbook tab it is possible to follow the entire production sequence and also the communication between the MC400 program and the PLC controller in tabular form.

It can also be seen here when an order was produced. The following line combination appears in the “delivery note” column, e.g. 4 / 1 / 310109 (order number / delivery / delivery note number).

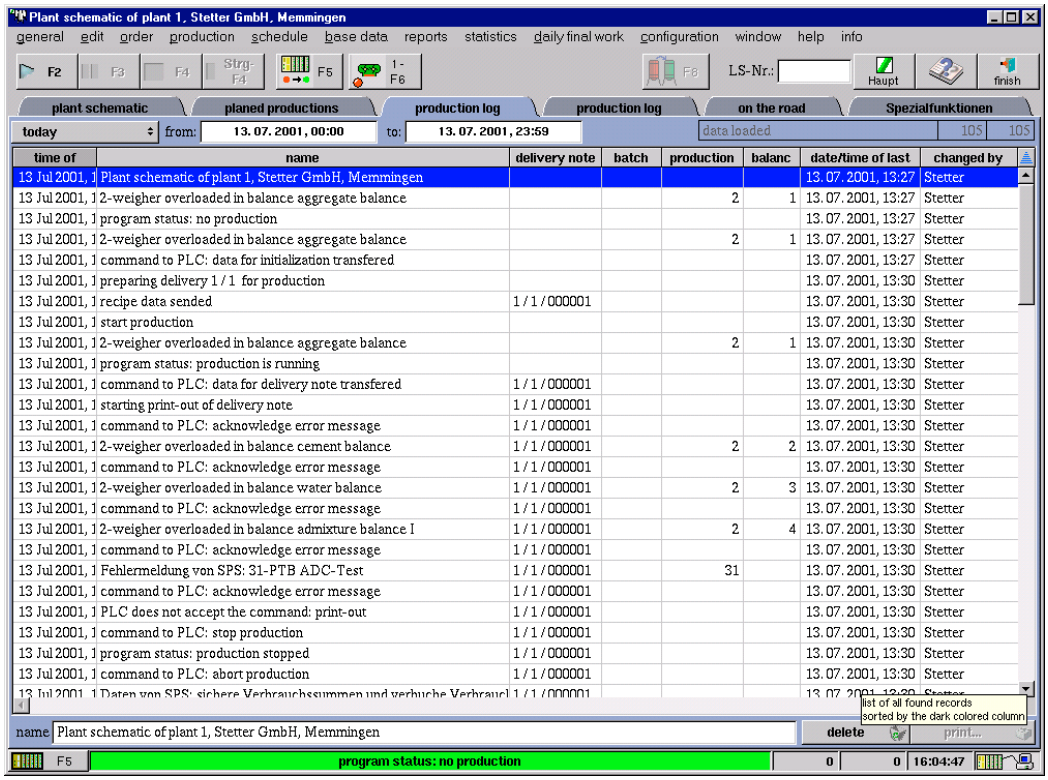


Figure 11-5: Production logbook

12 Schedule

The plant utilization rate (schedule) shows the planned productions (deliveries) as a graph. Scheduling is possible here in a very clear way. The plant utilization rate includes

- the representation in graph form of the planned deliveries and their schedule
- the plant utilization rate
- the truck utilization rate

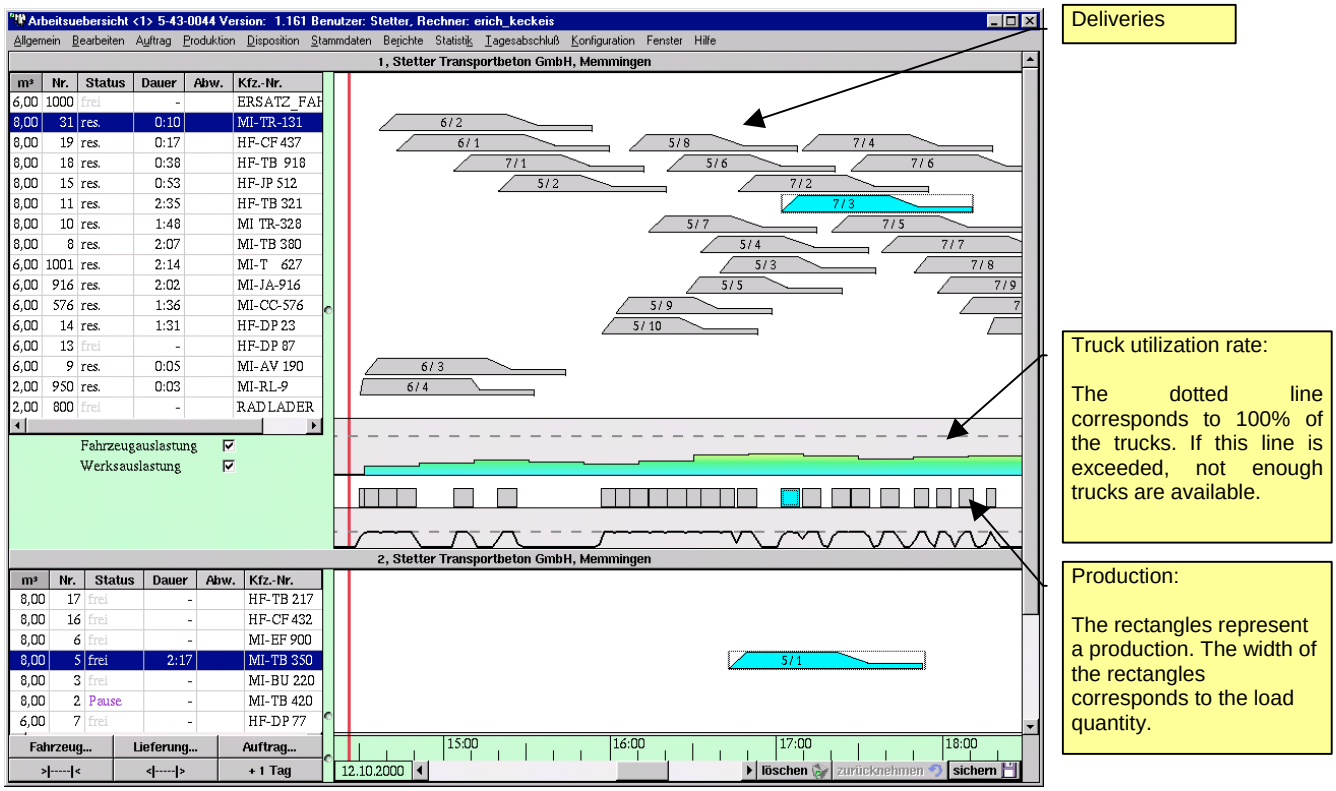


Figure 12-1: Set-up schedule (schedule)

With the “truck”, “delivery” and “order” buttons, small windows are opened in which we obtain further information about the selected range.

>|-----|<	The time range of the schedule window can be increased with this button.
<|-----|>	The time range of the schedule window can be reduced with this button.
+ 1 day	With this button, the time range of the schedule window can be increased by including the next day.

The status of a truck can have several states, e.g. free, outward trip, unloading, return trip etc. You can increase the status of a truck when the required truck is selected and when you press the right mouse button.

In the delivery overview, you have the possibility of moving the planned deliveries. If you click on the required delivery with the left mouse button and keep it pressed while making the move, you can assign the delivery to another truck and delivery time. Moving only functions within a plant.

If the selected delivery should be made by another plant, the <Ctrl> button must be pressed before moving.

By clicking once on the right mouse button in the delivery overview, you obtain a menu selection. There you can change to the plant schematic window, an order window, a delivery table or a characteristics window.

13 Configuration

The program is adapted to the requirements of the mixing plant and of the customer via different configuration parameters and options. The system configuration is normally carried out at the factory by Stetter GmbH.

The configuration is divided up into two parts. The comprehensive data is stored in the database. It can be edited via the “main window ->configuration“ tab or via the menu point “configuration“.

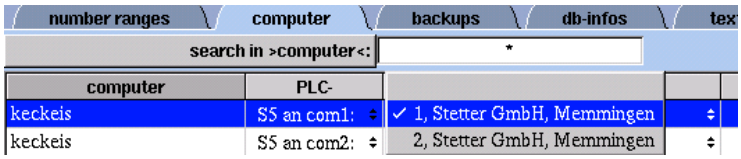
Less comprehensive data is stored in the Windows NT database. This data is reached via the menu point “General options”.

13.1 Configure basic data

This is basic data such as the plant address, the operating parameters etc. This data is written into the database. It is automatically saved during a data save. If an older database is read in, this configuration data is automatically overwritten.

13.1.1 Computer set-up

To set up the computer for a plant, you must first call up the “configuration – computer” tab. A new record of a computer is created in the data list with the “new“ button. The “computer” field is marked directly in the data list with a double click and the computer name is entered. The computer name is normally identical to the Stetter order number of the plant. If the computer is connected to a PLC, The name of the interface (e.g.: *com1:*) must be entered in the column “PLC-“. Select the associated plant with the aid of the list of plants.



If the plant is not yet set up, this computer / plant assignment can be done later.

In special cases, there are two mixers in one plant that can process a mixing order independently of each other. In this case, two PLCs are addressed. The computer record must then be copied and “com2:” entered in the “PLC-“ column. Before the changes are saved, the mixer for each connection must still be selected.

13.1.2 Parameterise plant

Under the “configuration-plants” tab, you can set a large variety of data that is relevant to the respective plant.

13.1.2.1 Plant data

The plant records are compiled under the sub-tab “address”. General data (such as name, address, contact partner etc.) is entered here.

If several plants are controlled by a MC400 system and if one plant is currently not available, it can be deactivated. The plant is then not included in the delivery calculation.

Tip 13-1: Deactivation of a plant

The “performance” field is for description purposes only and is not used further.

Adjustments can still be made for calculating the deliveries while making allowance for the working times and driving times. This is not necessary in normal cases.

If an advertising text is assigned to the plant, this appears on the delivery note if no batch values (print weigher values) are being printed out.

Tip 13-2: Advertising text on the delivery note

13.1.2.2 Configure mixer

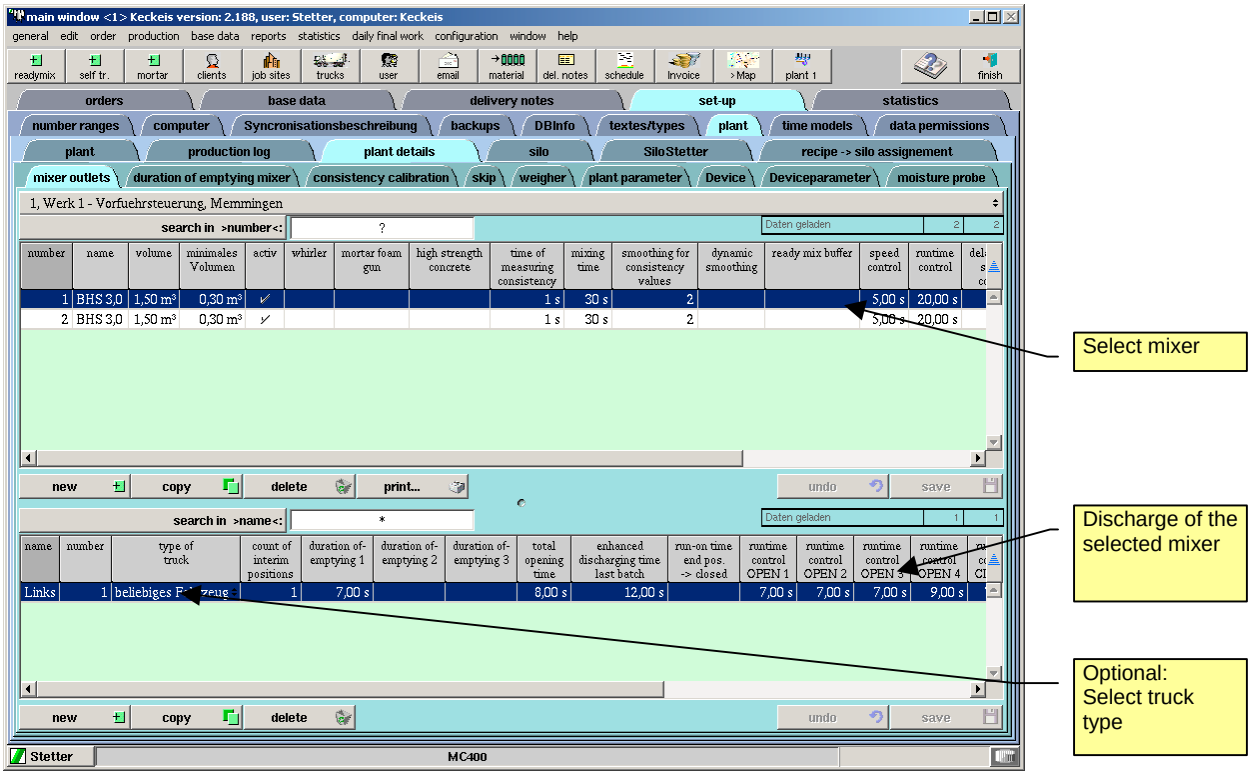


Figure 13-1: Configure mixer

The mixers present in a plant are edited under the “mixer” tab. A mixer record must first be created with the “new” button. The name field is marked by double clicking and the name of the mixer is entered.

A mixer has at least one or two discharges. A truck type is assigned to each discharge. The correct discharge is automatically pre-selected at the start of production on the basis of the truck type.

number	consecutive number of the mixer (e.g.: 1)
name	name of the mixer
volume	capacity of the mixer
active	The mixer for the PC software can be deactivated here. No orders can then be started for this mixer. This is useful in plants with 2 or more mixers. Activation and deactivation are faster via the plant schematic. Here we first point to the mixer symbol with the mouse and press the right mouse button. The mixer can be activated or deactivated in the menu that now opens.
whirler	A tick indicates whether the mixer has a whirler. Depending on a recipe that a whirler requests, it can then be automatically selected if there are several mixers present.
mortar foam gun	If a gun of this type is installed on the mixer, a tick must be made here.

time of measuring consistency

smoothing for consistency values

dynamic smoothing

If a mixer has two discharges, of which one is intended for the ready mix concrete and one for a finished unit plant, The discharges are pre-assigned accordingly. If a production order contains a bucket of a bucket system as the truck, the correct discharge is pre-assigned at the start of production.

Tip 13-3: Automatic selection of a mixer discharge

13.1.2.3 Mixer – additional discharging times

It is possible to define additional discharging times for the mixer. These discharging times can be linked to a truck. This may be interesting for trucks with a slow material input.

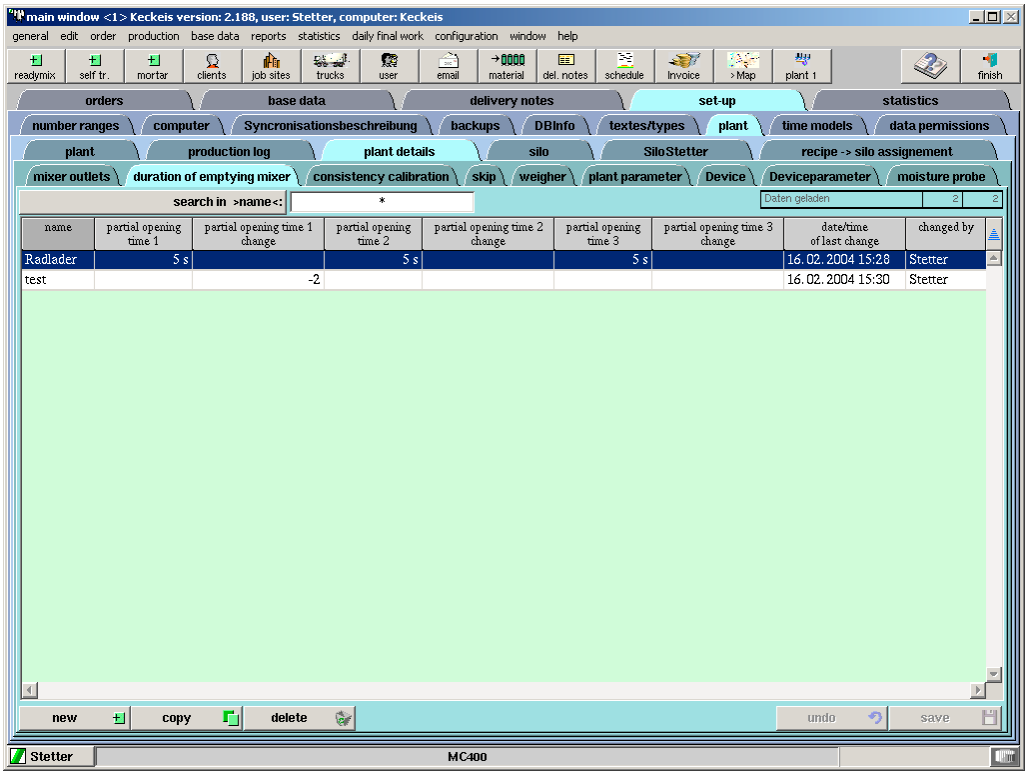


Figure 13-2: additional mixer discharging times

13.1.2.4 Configuration of the consistency / slump measurement

For measuring the slump while the production a calibration curve is necessary. The measurement of the slump is based on the measurement of the electrical power of the mixer. The actual power is automatically corrected by the power of the empty mixer. The power of the empty mixer is measured automatically.

The following diagram shows the slump over the measured power. The power is shown in %. With the help of this calibration curve the actual slump is shown within the plant schematic.

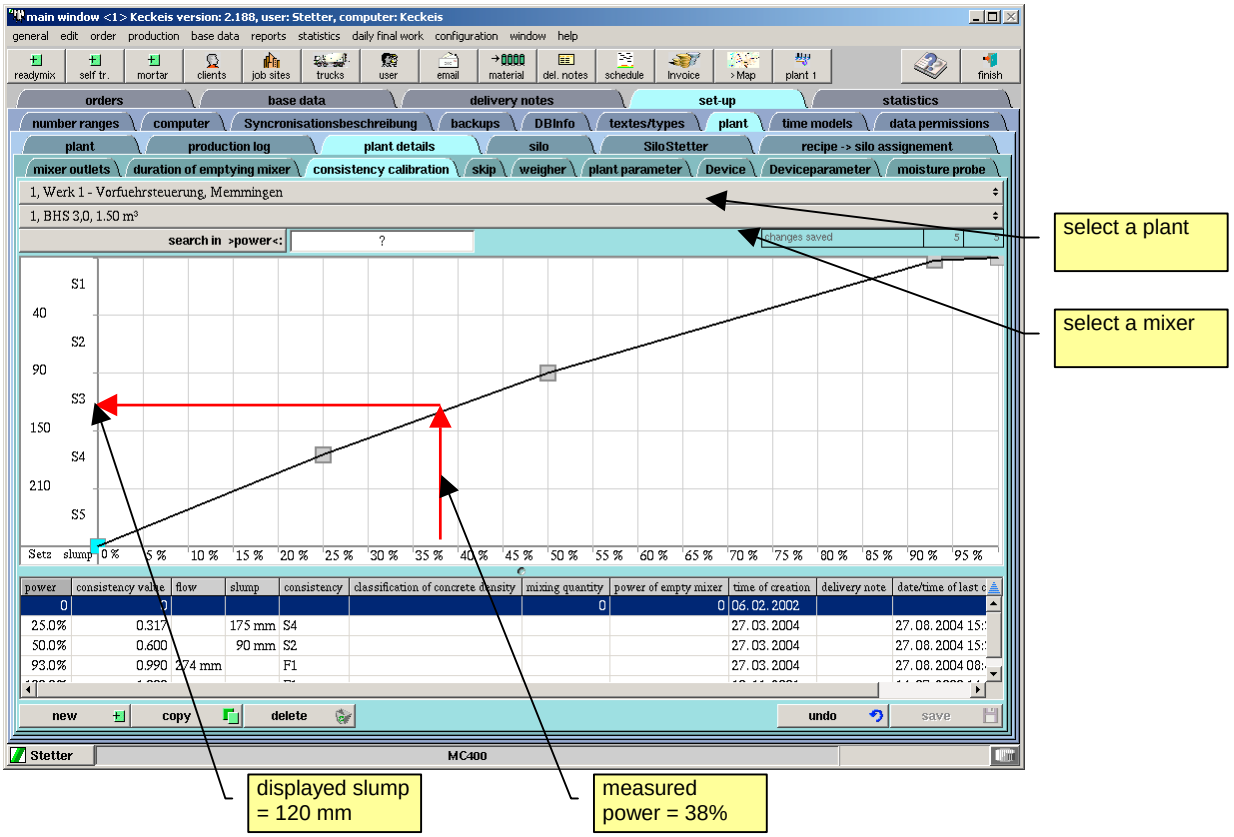


Figure 13-3: Consistency calibration curve

For default there is a calibration curve which has to be modified depending on the installed mixer and the plant.

This can be done

1. by copying an existing value, modifying the power value and moving the selected point with the mouse.
2. with the help of the slump display within the plant schematic. This way is described below.

13.1.2.4.1 Calibrating the slump meter

Within the plant schematic you will find the measured power displayed as the consistency or slump. MC400 has the option to switch between the consistency or the slump.

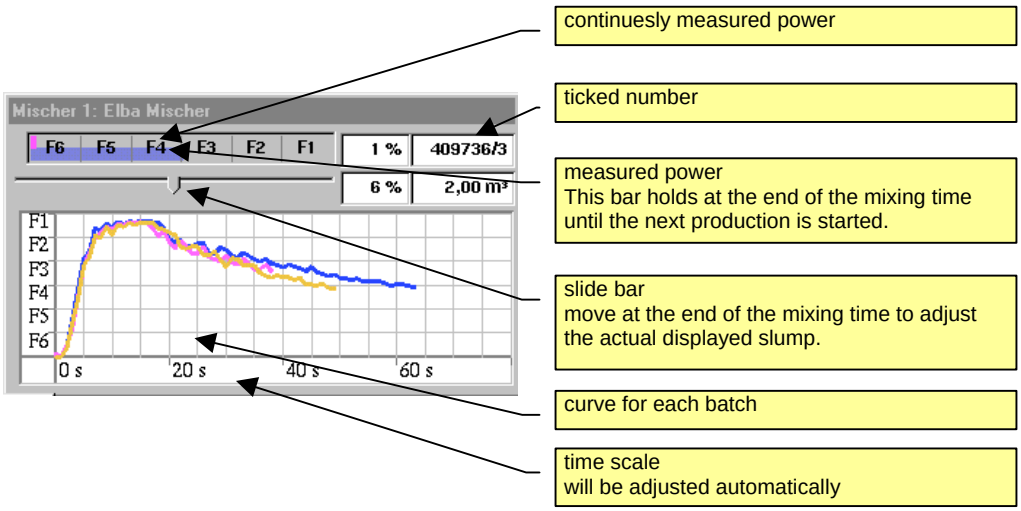


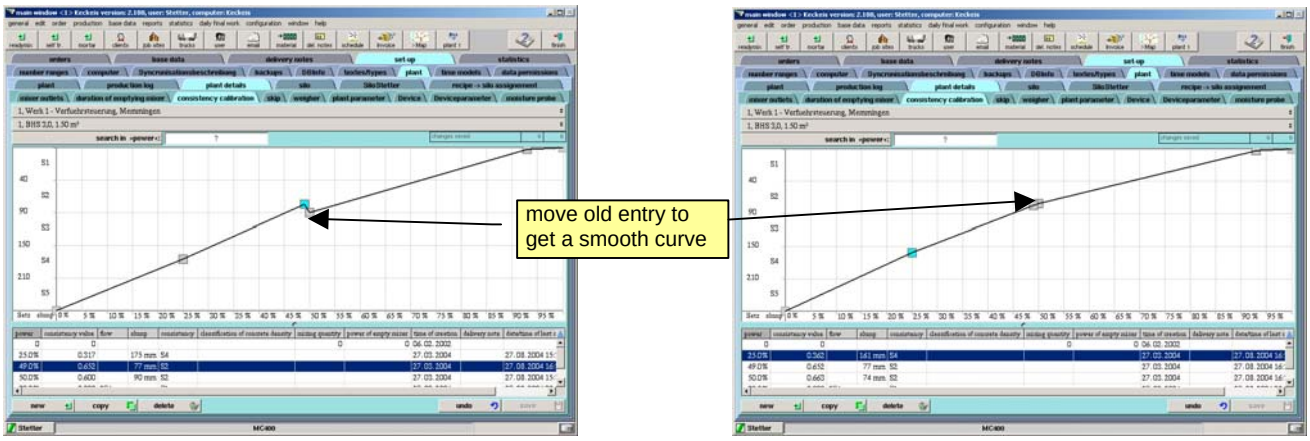
Figure 13-4: Consistency / slump within the plant schematic

(see also: 11.1.5 Description of the mixer symbol in the plant schematic on page 98

The consistency is displayed as a double bar. The same view is also shown within the mixer symbol. The upper bar (pink) is proportional to the mixer power, the lower one (purple) holds with the end of the mixing time. An additional slide bar is shown. It also moves parallel to the other bars. A short time (1-2sec.) before the end of the mixing time you can move the slide bar with the mouse while pressing the left mouse key.

E.g.: The bar shows slump S2 and you know that the recipe has a slump of S3 then you move the slide bar to the mid of S3.

As soon as you release the left mouse key a new measuring point is inserted into the calibration curve. This entry holds the actual mixer power, the new slump value and the ticked number. You should take a probe out of the actual batch and measure manually the slump. The ticked number helps to identify the new calibration curve point which now has to be adjusted by entering the manually measured slump into the table.



The other points of the calibration curve should be moves up or down to get a smooth curve. To get a realistic curve a slump adjustment should be made for each slump (S1-S5).

The following pictures shows a fine adjusted curve which is actually in use.

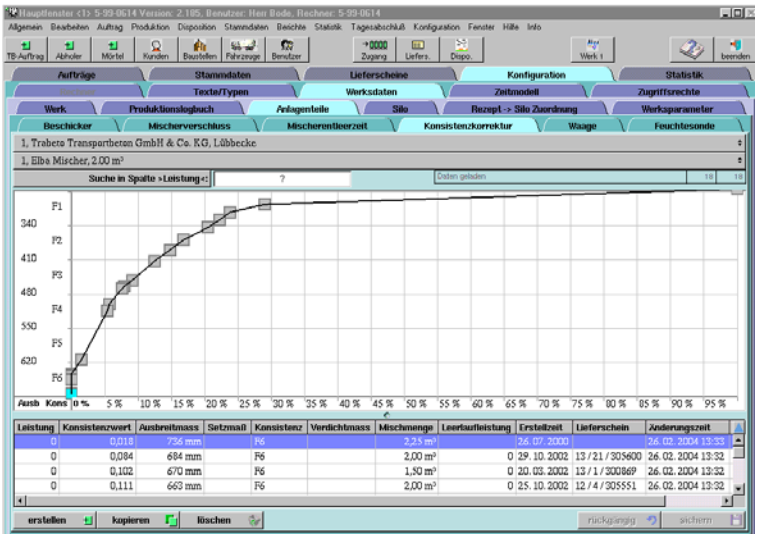
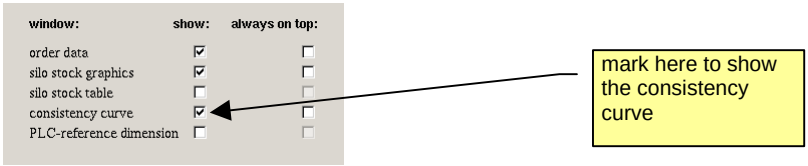


Figure 13-5: Consistency / slump - realistic calibration curve

If the slump meter is not shown within the plant schematic, it can be activated in the options.

plant schematic window ➔ general ➔ options ➔ additional panels

make a check mark for the entry



close the option window with the button "save and close"

Tip 13-4: Display the slump meter in the plant schematic

13.1.2.5 Configure weighers

Under the “weigher” tab, the respective weighers (bottom table) are assigned to the plants (top table). A new weigher is created with the “new” button and is assigned to a weigher type. For this purpose, a few weigher types are already defined in the selection button for scales.

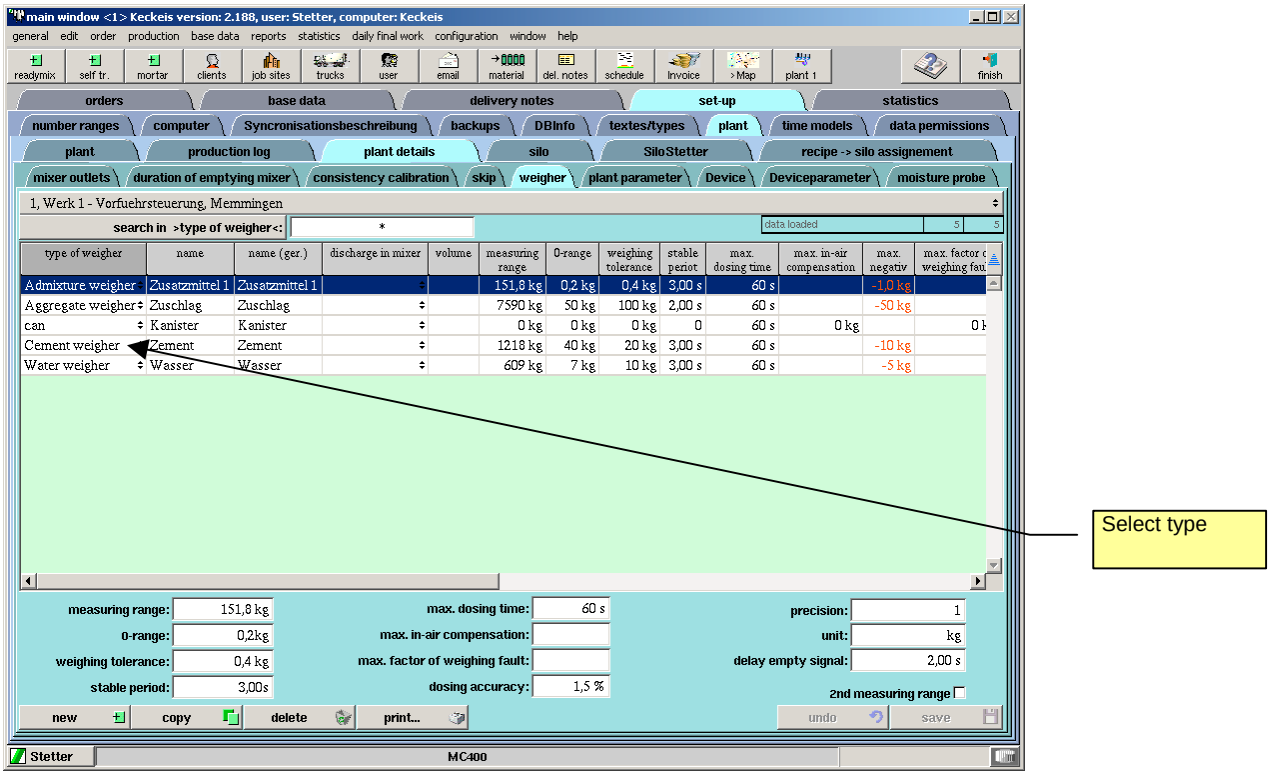


Figure 13-6: Configure weighers

type of weigher	Defined via the selection button
name	Name of the weigher
measuring	Transfer of the data from the weigher scales
0-range	The weigher is defined as empty within the zero range. The value is dependent on the measuring range. Order of magnitude 2-3 digits. If the zero range is too small, the weigher may not arrive at zero due to vibrations or it takes longer. If the zero range is too great, the weigher is not completely emptied.
weighing tolerance	The actual weight may deviate from the set weight by this value during dosing. If this tolerance is exceeded, an error message is output. Order of magnitude: 5% of the measuring range
stable period	This is a pause time that is maintained between weighing the individual components in order to record the dosing weight as precisely as possible. Order of magnitude: 1.5s
max. dosing time	The dosing process must be completed within this time. If this is not the case, an error

	message is output Order of magnitude: 30s
max. in-air compensation	This value limits the correction of the compensation. Order of magnitude: 10% of the measuring range
max. factor of weighing fault	This value is added to the set weight in order to define the upper limit of the dosing for the individual components. This limits weighing fault Order of magnitude: 5% of the measuring range.
dosing accuracy	Requested quantity (-1,5% to +1,5%) in order to exhaust the limits of the actual dosing accuracy.
two ranges	For scales with measuring range switchover
precision	Number of decimal places 2 in the case of most admixture weighers 1 in the case of large weighers 0 in the case of all other weighers
unit	Unit (ltr. or kg) for the materials of this weigher

Table 13-1: Weigher parameters

13.1.2.6 Silos

The complete list of materials must be available so that the silos can be loaded with the correct materials.

A new silo record is created with “new”. The material is selected for the silo from the list of materials with the selector switch. The silo must now still receive a silo number, which must be unambiguous within a material type. The weigher into which the silo is emptied is determined with the selector switch. This function so far has no special meaning.

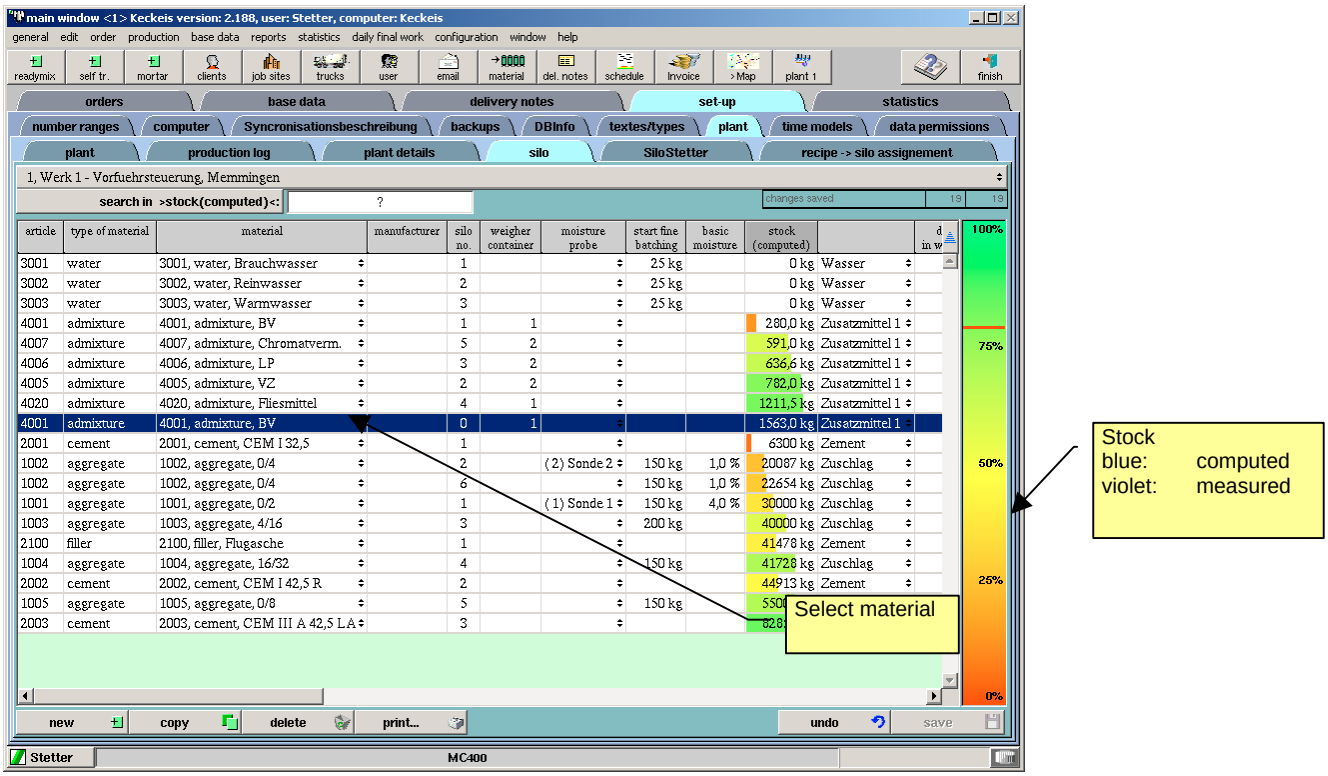


Figure 13-7: Configure silos

silo no.	The silo number is defined during commissioning. In the case of admixtures, this is the pump number.
stock (computed)	Here you can directly enter the stock. However, it is preferable to set the stock here to 0 and to update the stock via the material deliveries. The material deliveries are then documented.
filling level (computed)	Given in % compared with the maximum stock
stock (measured)	Optionally, the silo stock can be measured. The signals are then forwarded to the PC via the PLC.
filling level (measured)	Measured filling level in %
possible qty. for ordering	This is the difference between the maximum quantity and the stock.
minimum stock	The “minimum stock” column causes a warning signal in the plant schematic if it is fallen below during production.
maximum stock	Enter the maximum stock here. The variables that depend on this can then be computed.

weigher container	Only for admixture weighers: The number of the weigher emptying pump is required here.
start fine batching	If a quantity is entered here, when the set value minus this quantity is reached, fine batching is activated if the system supports this function.
basic moisture	Only for aggregates: This is the moisture that is taken into account in the dosing if no moisture code is set. However, if a moisture probe is set, the measured moisture value is taken into account in the dosing if it is greater than the basic moisture.
moisture probe	The number of the moisture probe for the moisture measurement
measured moisture	The last measured moisture is entered here is a moisture probe is set.
correction of qty. of fine particles	A tick identifies the silo for which allowance is made in the correction of the quantity of fine particles of the recycled water. This correction can be activated in the daily set-up data. The quantity of fine particles of the recycled water is subtracted form the sand. The silo containing the sand is identified here.
measuring line	Optional: In a filling level measurement, the number of the measuring signal is given here.
measuring minimum	Lower limit of the filling level measured value
measuring maximum	Upper limit of the filling level measured value
filling level warning	Necessary for a colour change of the graphic filling level display in the plant schematic.

13.1.2.7 Recipe - silo

As standard, the recipes contain the materials that are present in the silos. However, if a certain material should be dosed from another silo, this must be set here. Also enter the alternate silo here that is used when the original silo is empty. This function is optionally available.

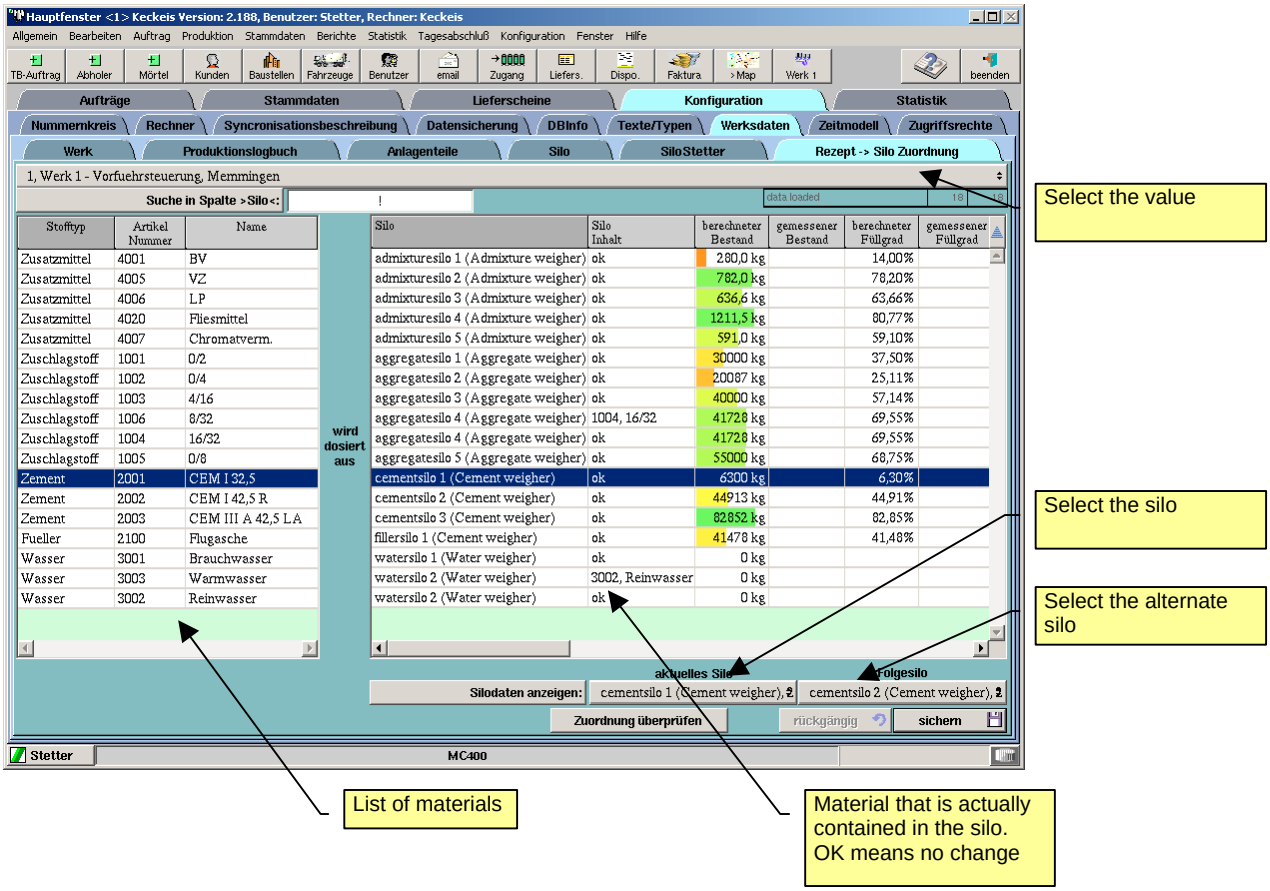


Figure 13-8: Recipe -> Silo

13.1.2.8 Plant parameters

Here you can create and enter different plant-dependent parameters. With the “new” button, already defined records are taken from the opening window “PLC parameter”. The plant parameters are configured at the factory Stetter GmbH and do not normally need to be extended. In operation, it may be necessary to change different values (times etc.) to optimise the plant performance. However, this should only be done after consulting Stetter GmbH.

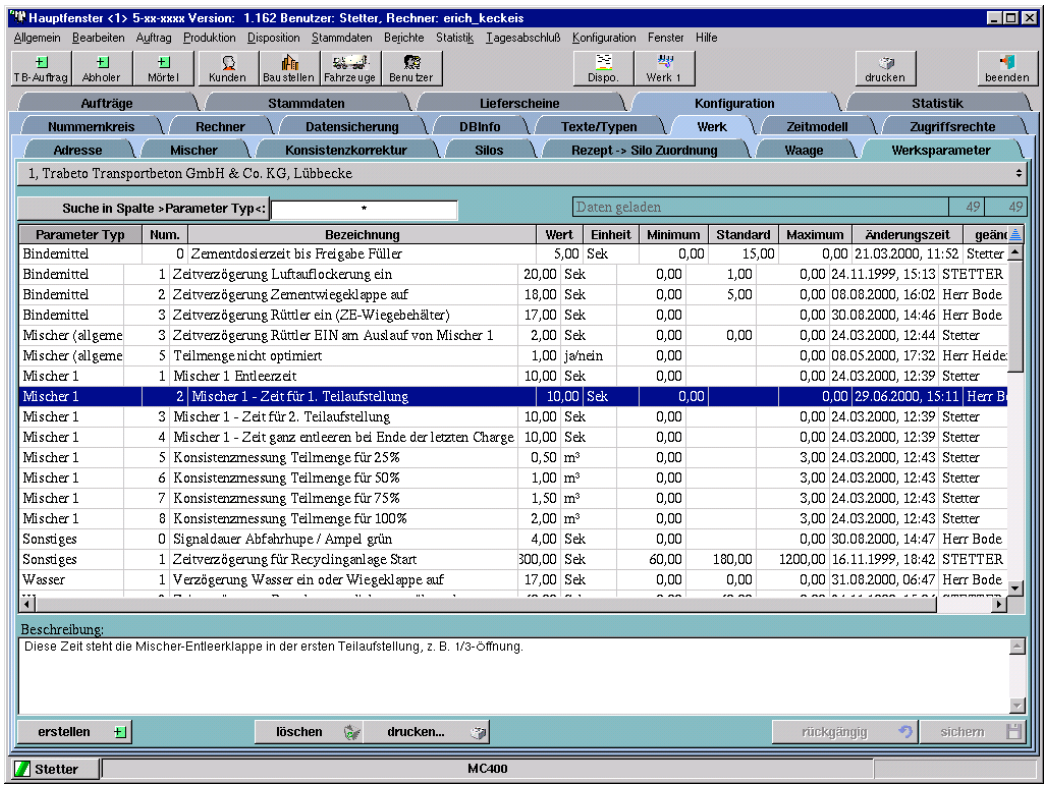


Figure 13-9: Plant parameters

13.1.2.9 Possible production error messages

This is the list of all possible production error messages that can occur during production. For each error message there is a description, a possible cause and a suggested remedy.

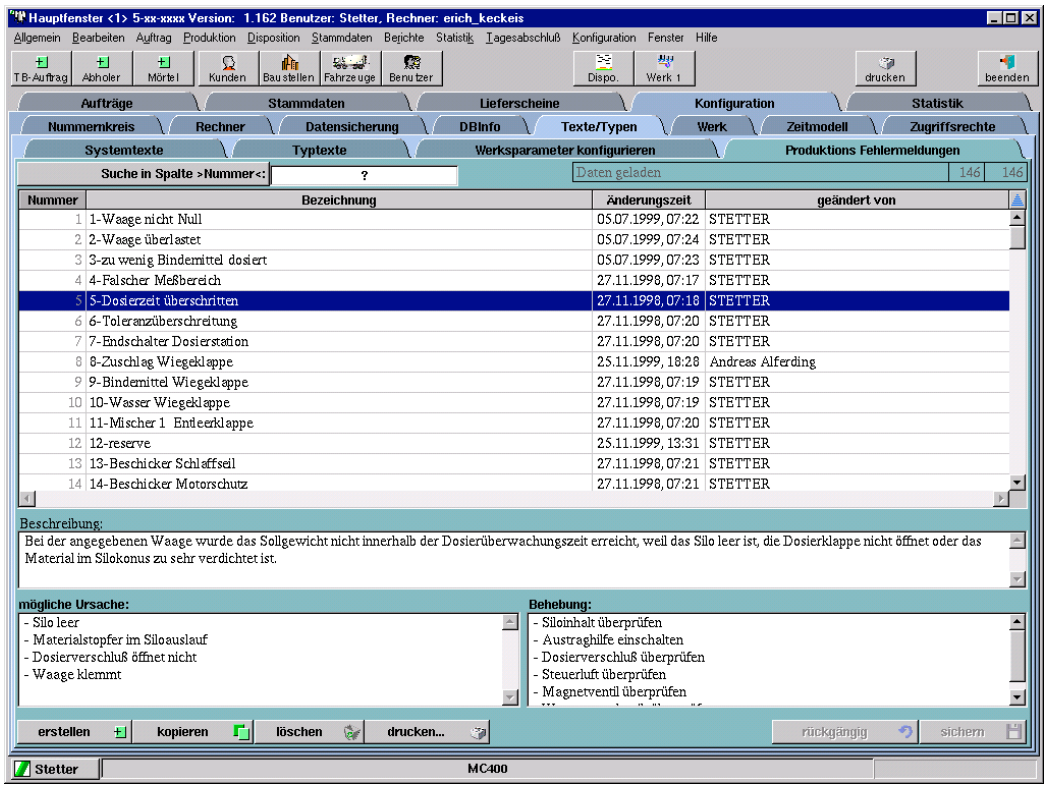


Figure 13-10: Possible production error messages

The quickest way to change to the error messages is to position the mouse pointer on the status line in the plant schematic and to press the right mouse button. A menu then appears with the entry “display PLC error”. Select this entry and confirm it with the left mouse button. The program then changes to the main window and here to the error message list.

This can be useful when an error occurs and the meaning of this error is not clear.

Tip 13-5: List possible production errors

The production errors that have occurred are displayed in the production logbook.

13.1.3 Time model

The times stored here are of significance when a radio status is used. Warnings are also output if the working times are exceeded. The holidays are taken into account for the automatic calculation of the deliveries.

13.1.3.1 Weekly working times

The working times (from – to) for each day (Monday to Sunday) are stored here. If these times are exceeded during calculation of the deliveries, an entry is made in the protocol of the calculation. This protocol can be opened in the order dialog via the “protocol” button.

13.1.3.2 Holidays

The days entered here (from date – to date) are taken into account in the calculations of the deliveries. The entries are assigned to a plant.

If several plants are managed via a MC400 program, the calculation of the deliveries and the assignment of the deliveries to the plants can be influenced by holidays being set for a plant if this plant is not being used.

Tip 13-6: Making a plant unavailable for several days

13.1.3.3 Traffic times

The driving times to the job sites are stored and updated here when the status of the truck is set. This normally occurs automatically via radio. When correcting driving times, allowance is made for the different times of the day that have an influence due to the traffic.

13.1.4 Permissions

Every user must log on at the start of the program. He can select his name from a selection button in the log-on dialog of MC400. A password is assigned to each user. The password can only be changed by an authorised person.

As many users as required can be set up.

Every user is assigned to a user group. The user group in turn has assigned to it permissions to use the program. As many user groups as are required can be set up.

13.1.4.1 Group

After a new record has been compiled, a unique name is issued for this group. The input limits for a recipe change can be defined for each group via the order.

If, when a recipe is changed via the order, the message “maximum exceeded” appears, the reason for this is that corresponding limits have been set for the operator’s group.

Tip 13-7: Input limits for the changes to a recipe via the order

13.1.4.2 User

A newly created user must be assigned to a group. The password can remain free, but should be defined. The user name appears in the selection list of the log-on dialog. It also appears in the title line of MC400.

13.1.4.3 Group permissions

Individual permissions are issued to every group here. These permissions relate to the use of individual buttons, the tabs, the reports etc. Each listed control element can be rendered unusable and invisible.

13.2 Options

The options are reached via the menu point “General – Options”.

This data relates to settings that are not saved with the database. They are stored within a configuration file and remain preserved, even when an older database is imported.

These settings relate to the selection of the printer, format details, directories used etc.

13.2.1 Set printer

The various printers for “reports / statistics”, “delivery notes” and “production protocols” are defined here. So that a printer can be defined, it must first be set up under Windows XP™. Network printers can also be used.

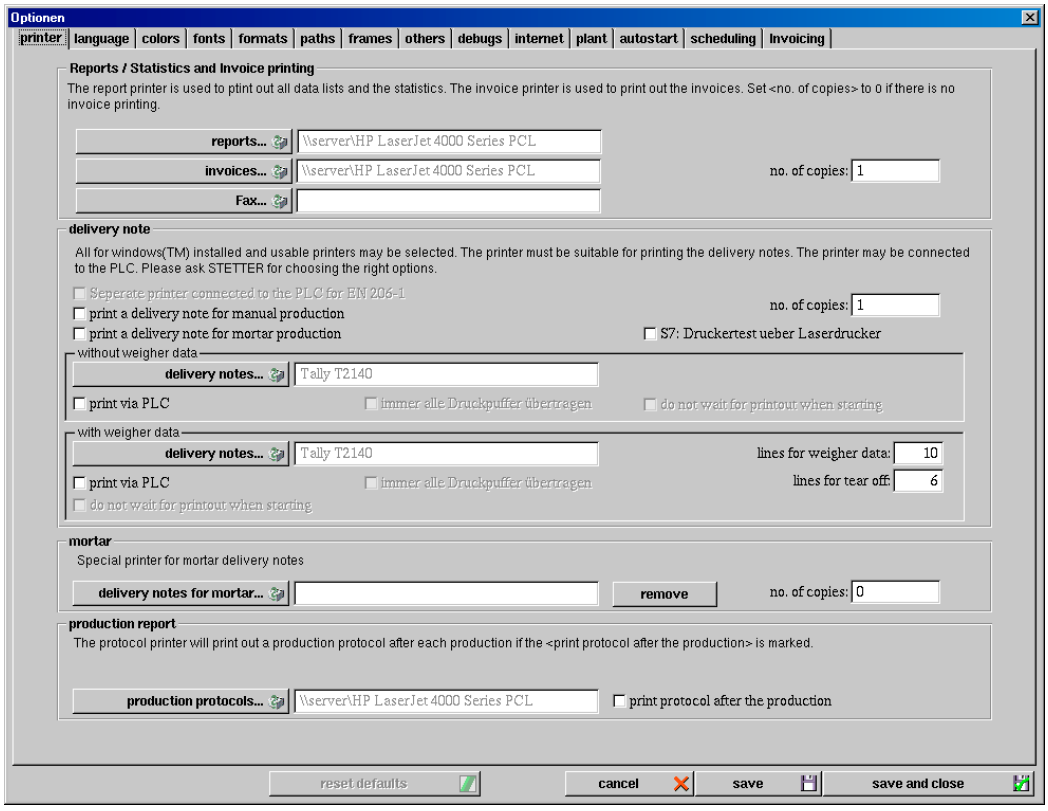


Figure 13-11: Options – Printer

13.2.1.1 Report printer

This includes reports such as statistics, delivery note details, base data lists etc.

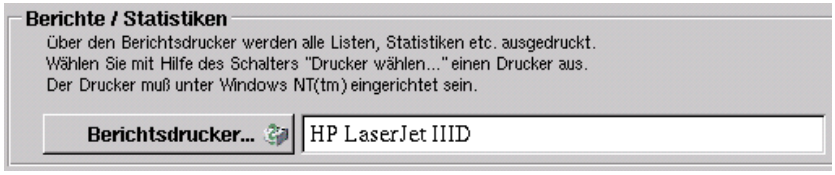


Figure 13-12: Define report printer

Nothing should be changed in the following dialog. It serves only as an intermediate step for selecting the printer.

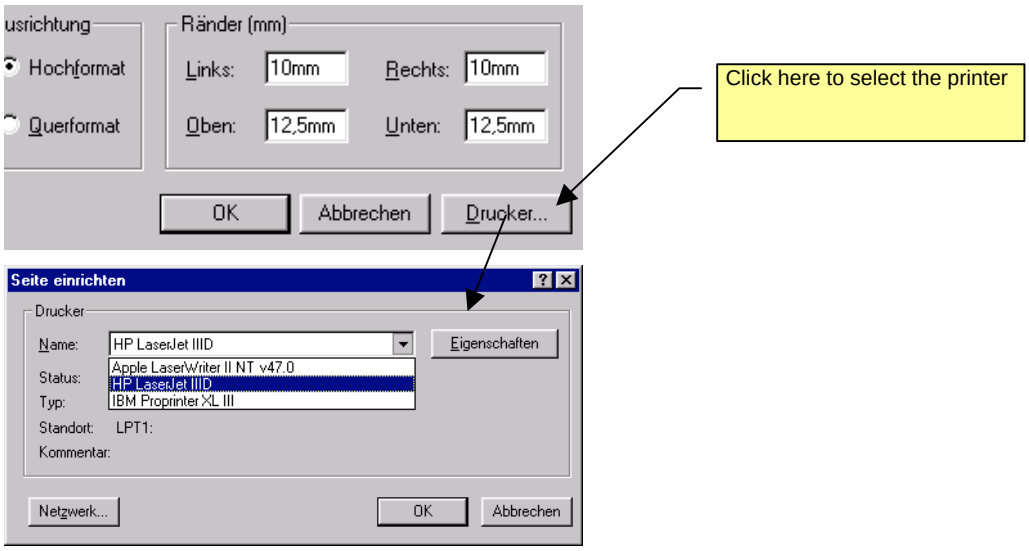


Figure 13-13: Select a printer from the printer list

13.2.1.2 Delivery note printer

The delivery note is selected like the report printer.

With some configurations, the delivery note printer is controlled by the PLC. In this case, the “printing delivery note via PLC“ field must be ticked with a mouse click. The printer must be entered in all cases. If the delivery note is being printed via the PLC, the selected printer must be set up under Windows NT in such a way that it diverts the print-out to the file “lieferschein.prn“. Stetter GmbH provides information about which printer can be used.

The number of lines for the actual values refers to the number of batches that can be printed out.

To deactivate printing of the delivery note, set the “no. of copies” to 0. If a laser printer is selected as the delivery note printer, it may be appropriate to output several copies of the delivery note. The “no. of copies” can then be set accordingly.

Tip 13-8: Number of delivery note copies and switching off the printer

13.2.1.3 Protocol printer

A protocol is compiled for each production (also in manual mode). The printer is selected in the same way as the report printer. Any desired Windows printer (including network) can be used.

When it is necessary to print out the protocol immediately after production, the field “print protocol after production “ is marked.

Tip 13-9: Activating and deactivating protocol printing

13.2.2 Define formats

Various formats such as the date format, the currency and the format for sending the delivery note data for billing or for further data processing are set here.

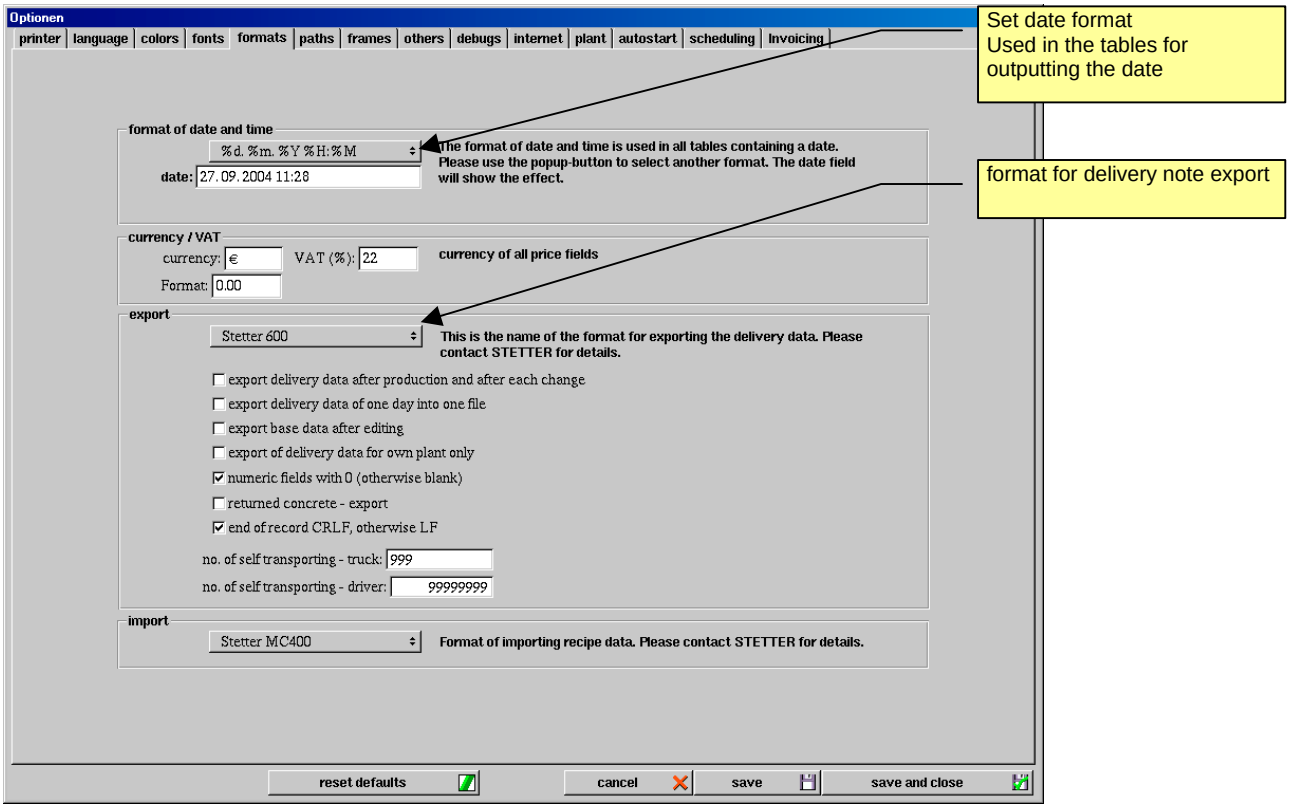


Figure 13-14: Options – Formats

13.2.3 Define directories

The directories for “database backups“, “data – export / import“, “export production data to“ and “copy production data to” are defined here. The directories can be changed here. Network directories can also be selected.

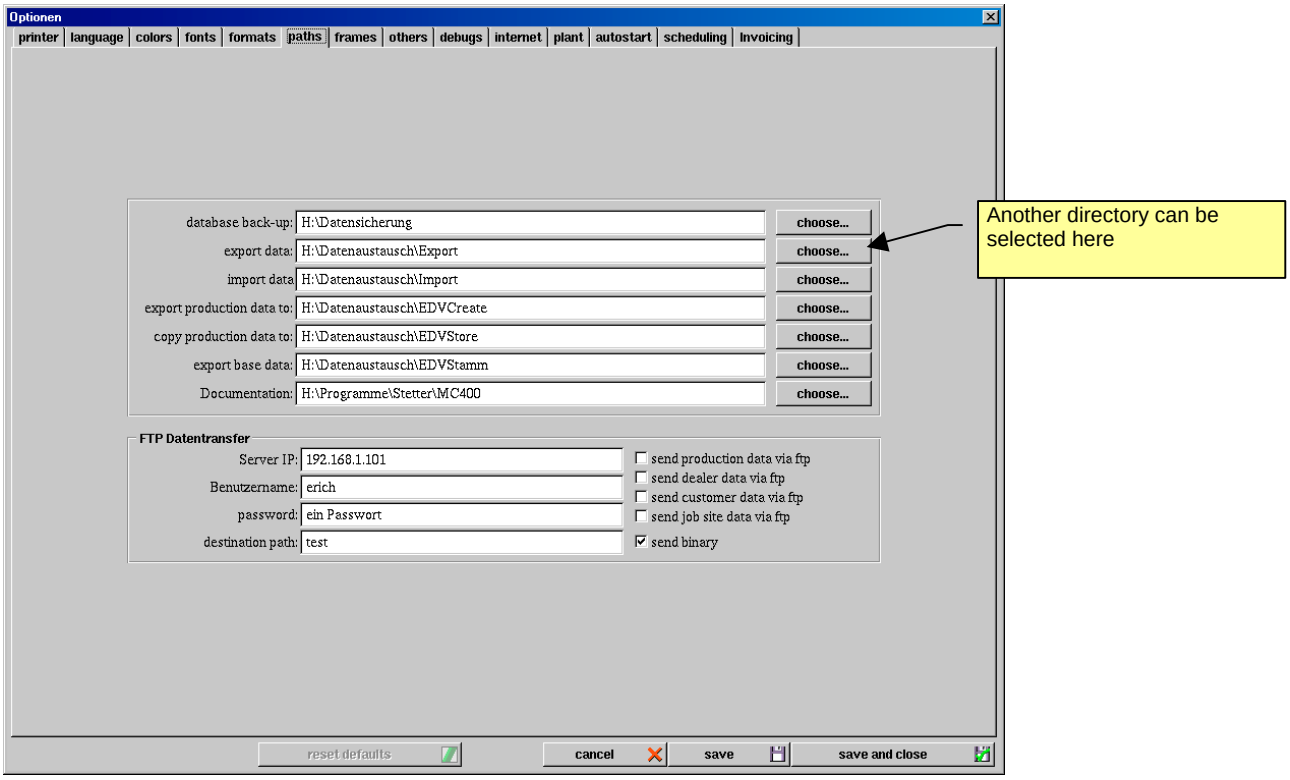


Figure 13-15: Options – Define directories

14 Check Values for Commissioning

Various configuration data must be examined for commissioning.

14.1 General plant data

14.1.1 Plant

14.1.1.1 Plant - address

Update the plant address and all available data.

Tab: Configuration -> Plant -> Address

14.1.1.2 Plant - Mixer

Update the name of the mixer and check the volume.

Mark the “active” column so that the mixer can be used. The “whirler” column should only be marked if the mixer has a whirler installed and if there will be recipes that require a whirler.

The “mortar foam gun” column must be marked if a mortar foam gun is installed on the mixer. If a recipe should be dosed with mortar foam and if the text “check mortar foam” is marked in the “Plant“ options (Menu point: General ->Options -> Plant). This means that production orders with recipes that require mortar foam are only listed if the mixer has a mortar foam gun.

Select the type or types of discharge. This is normally “any truck“.

(see: 13.1.2.2 Configure mixer on Page 106)

14.1.1.3 Plant – weighers

Check the entries in the list of weighers

14.1.1.4 Plant – plant parameters

All the necessary parameters should be listed here. If a parameter is missing, this can be taken from the list of all available parameters with “new”.

Check the settings.

14.1.2 Materials

The list of all available materials (aggregates, cement etc.) must now be updated.

Tab: base data -> material management -> materials

Enter all materials here. Ensure that the article numbers are unambiguous. They are required for the material consumption statistics.

In the case off retarders, enter the conversion for 1 hour’s delay. In recipes with retarders, it is then possible to calculate the delay time.

14.1.3 Plant – silos

When all materials are available, the silo assignment must be configured.

Tab: configuration -> plant -> silos

Create a record for every silo and assign a silo number. Enter pump numbers under silo numbers.

In the case of admixtures it is essential to enter the number of the weigher container of the admixture weigher. The number is the number of the emptying pump.

In the case of the aggregates, enter the basic moisture and if necessary the number of the moisture probe. To correct the quantity of fine particles of the recycled water, the aggregate silo must be marked with the sand in the column "correction of qty. of fine particles".

When the stock is measured and the signals are read in via the PLC, enter the number of the measuring line of the A/D converter in the “measuring line” column. The limits of the measured value are between 0 and 4096. The maximum must be adjusted so that the shown filling level (in %) corresponds to the actual filling level.

Note on the silicate: The pump (silo) 4 must contain the silicate when it is dosed via the water weigher.

After completing the changes, do not forget to save them.

14.1.4 Plant – Recipe->Silo assignment

The table Recipe ->Silo assignment must now be checked.

On the left side you will find all the entered materials. On the right side an entry must be made for every material to which a silo is assigned. Mark the material on the left side. Select the silo next to the “silo / alternate silo” button. All materials of the same material type are listed with a mouse click on the selection button. The number next to the material type indicates the silo number.

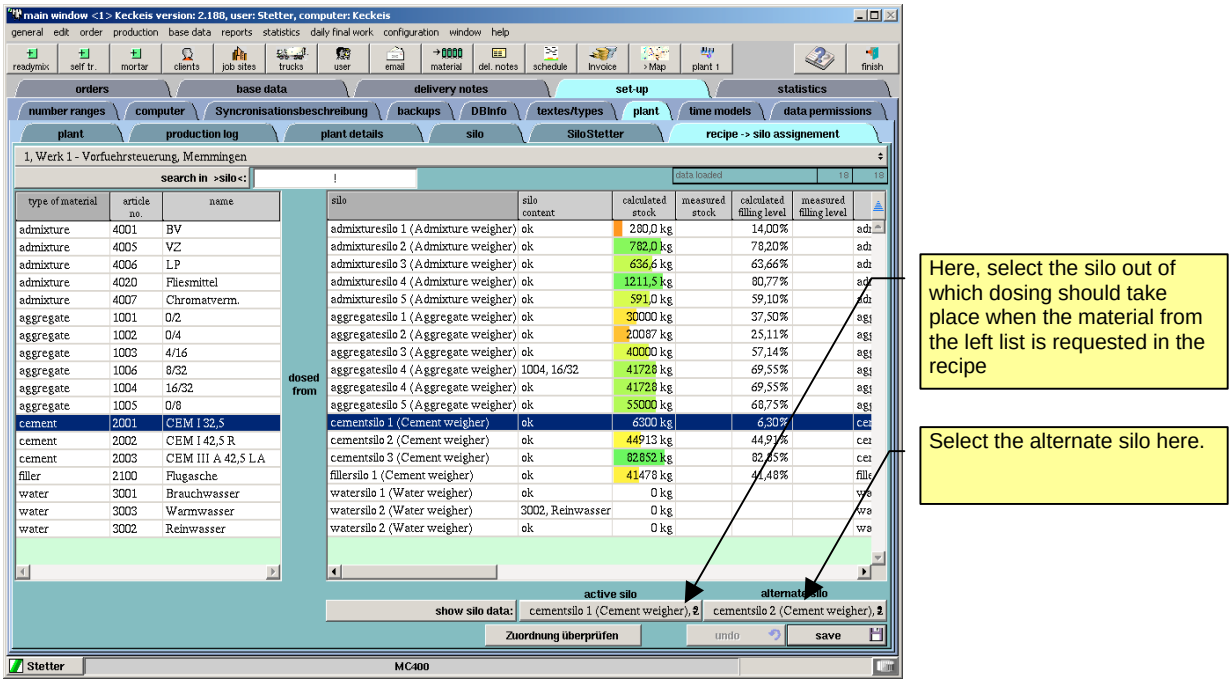


Figure 14-1: Silo - Alternate silo assignment

14.2 Base data

14.2.1 Suppliers

Tab: base data -> material management->suppliers

Enter the material suppliers here. This list is required for material delivery processing. You can also carry this out at a later time.

14.2.2 Truck data

14.2.2.1 Transport subcontractors

Tab: base data -> truck data-> transport subcontractor

You should first create the list of transport subcontractors if you are using trucks of transport subcontractors.

14.2.2.2 Driver

Tab: base data-> truck data -> driver

Before you create the list of trucks, the drivers must exist. This list can also be changed or added to later.

14.2.2.3 Trucks

Tab: base data -> truck data -> truck

Update the list of trucks here. The “ALTERNATE _TRUCK “ cannot and must not be deleted. It is marked as such in the “alternate truck” column and serves as the joker when trucks run out when planning the deliveries.

Trucks should be assigned to the type “others” if the registration number is not known by the start of production. The registration number can be entered in the list of production orders. The entry then applies only to this production. This is useful when transport subcontractors’ trucks are used but when the registration number is not yet known.

14.2.3 User texts

14.2.3.1 Characteristics

Tab: base data -> user texts->characteristics

The texts of the concrete characteristics must be entered here. They can later be assigned to the recipes when the recipes are updated.

14.2.3.2 Types of unloading

Tab: base data -> user texts ->types of unloading

The types of unloading are necessary for calculating the deliveries. If you have pumps, give the type of unloading the name of the pump. If you mark the “enable statistics“ column, you can in this way create a “pump statistic”.

14.2.3.3 Note

Tab: base data -> user texts -> note

A record can be selected from the notes when the order is being entered. The text is then output on the delivery note.

14.2.3.4 Embargo texts

Tab: base data -> user texts -> embargo texts

This list can also be corrected later. Enter texts for customers, job sites or recipes here and define whether it is a warning or an embargo. In the case of embargoes, it is recommended to issue a password. The embargo text appears when an order is to be created for a customer or when production is being undertaken for a customer. Embargo texts can be assigned to dealers, customers, job sites and recipes.

14.2.3.5 Advertising texts

Tab: base data -> user texts -> advertising text

Here you can define different advertising texts that are printed out on the delivery note. In the case of the plant data (tab: configuration -> plant -> address) it is possible to assign a particular advertising text to a plant.

14.2.3.6 Special services

Tab: base data -> user texts -> special service

Here you can enter the special services that are used in the orders and printed out on the delivery note.

14.2.4 Distributors

Tab: base data -> distributor

If you use distributors, enter the possible distributors here. These can be sales persons or companies. A statistic can be compiled later about the distributors.

14.2.5 Recipes

Tab: base data -> user texts -> recipes

The recipes can be created when all material data is available.

(see 9.1.6 Re Page 52)

15 Questions and answers

15.1 Why does the status of an order show “requested material not found” ?

During planning, there is a check as to whether the useable plants can produce the materials required in the recipe. If a material is not present, this status is displayed. A mouse click on the “protocol” button enables a window containing more precise details to be opened. A frequent error can be found in the recipe / silo assignment. Check whether the material is redirected here.

15.2 How can I re-print a protocol?

Change to the delivery notes and select the delivery note whose protocol you want to reprint. With the right mouse button, open a menu from which you can select the required function.

15.3 How can I re-print a delivery note?

Change to the delivery notes and select the delivery note that you want to reprint. With the right mouse button, open a menu from which you can select the required function.

15.4 Why can I not find a newly created order?

Check whether the “delivery time” column has a dark background. If so, there is a date / time value in the search field. Orders with an older data or an older time are then not listed.

Delete the entry in the search field or select another column as the search column.

Sometimes it is also useful to update the data list. This means that not all data of the database is displayed. Select the menu point “edit“->“update display “.

15.5 How can I print a delivery note with weigher values?

In the orders table there is a column “print weigher values”. A tick must be entered here. You get the tick by clicking with the mouse in the field of tables. Alternatively you can also select another delivery note form. In the input fields there is a selection button that makes available the text “delivery note with weigher values “. Select this form. The tick in “print weigher values” is then set automatically.

15.6 How can I look at the job site statistics for a particular period?

Change to the job sites and select the required job site. With the ***print...*** button you open the print assistant.

Here, select the point ***job sites - list***. With ***continue >*** you get a further selection. Here, select the point ***with finished deliveries***. In the next step, enter the required date range and select the point ***selected records***. With ***display*** or ***print*** you obtain the required report.

16 Examples

16.1 Create and change driver

There are 3 possibilities for accessing the driver data.

- Via the menu base data / driver
- With the key combination <Ctrl>+<⇧>+<A>
- Via the base data / truck data / driver tab

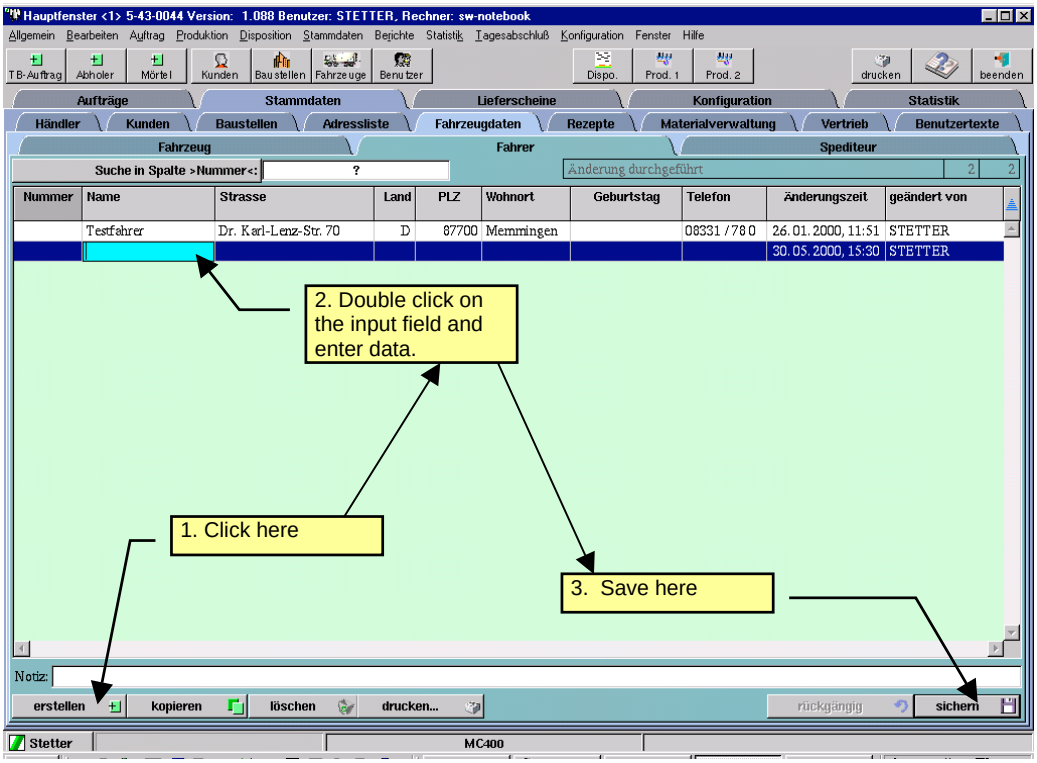


Figure 16-1: Create driver

How do you create a new driver?

- Click on the insert button.
- Enter the requested data in the required fields (by double clicking).
- Click on “save”

16.2 Create and change trucks

There are 3 possibilities for accessing the truck data.

- Via the menu base data / trucks
- With the key combination <Ctrl>+<⇑>+<F>
- Via the base data / truck data / trucks tab
- Click on the “trucks” button

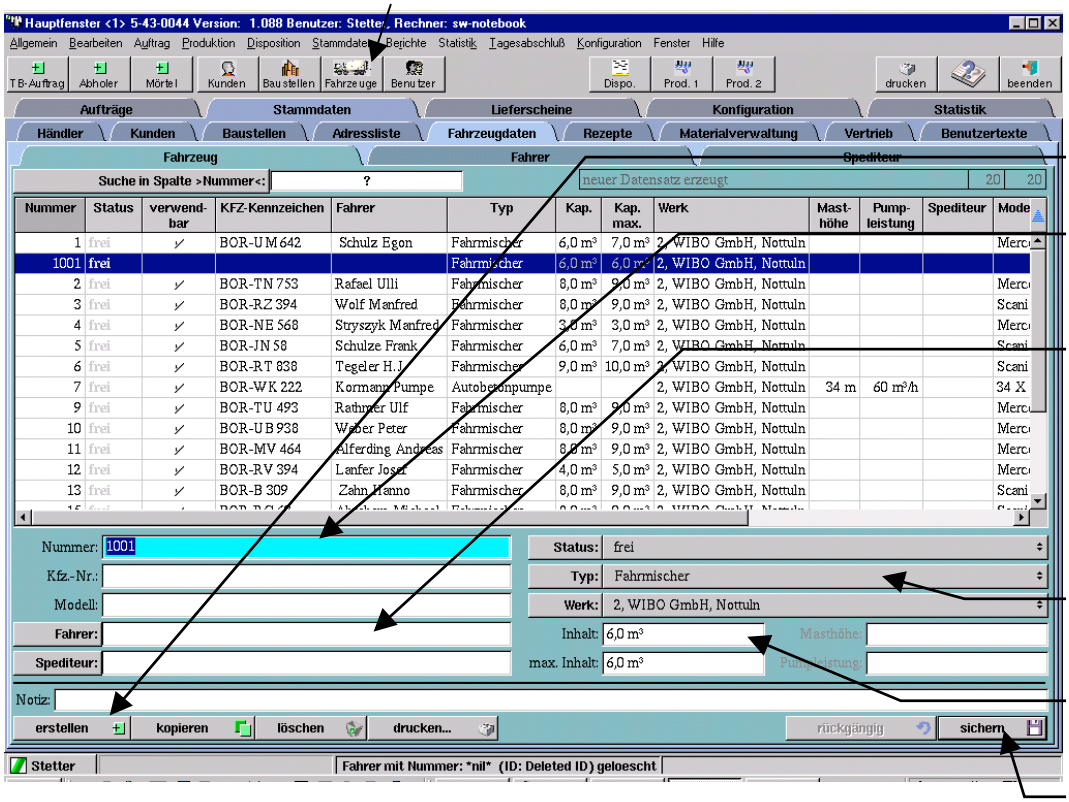


Figure 16-2: Create truck

How do you create a new truck?

- Click on the insert button.
- Enter the requested data in the required fields (by double clicking).
- Mark the input field “driver” and select a driver
- If the truck belongs to a transport subcontractor, mark the input field “transport subcontractor” and select a transport subcontractor.
- Select the type of truck
- In the “content” input field, enter the capacity of the truck.
- In the “max. content” input field, enter the maximum capacity of the truck. This is the quantity designation for the production.
- Click on “Save”

16.3 Create and change dealer

There are 3 possibilities for accessing the dealer data.

- Via the menu base data / dealer
- With the key combination <Ctrl>+<⇑>+<H>
- Via the base data / dealer tab

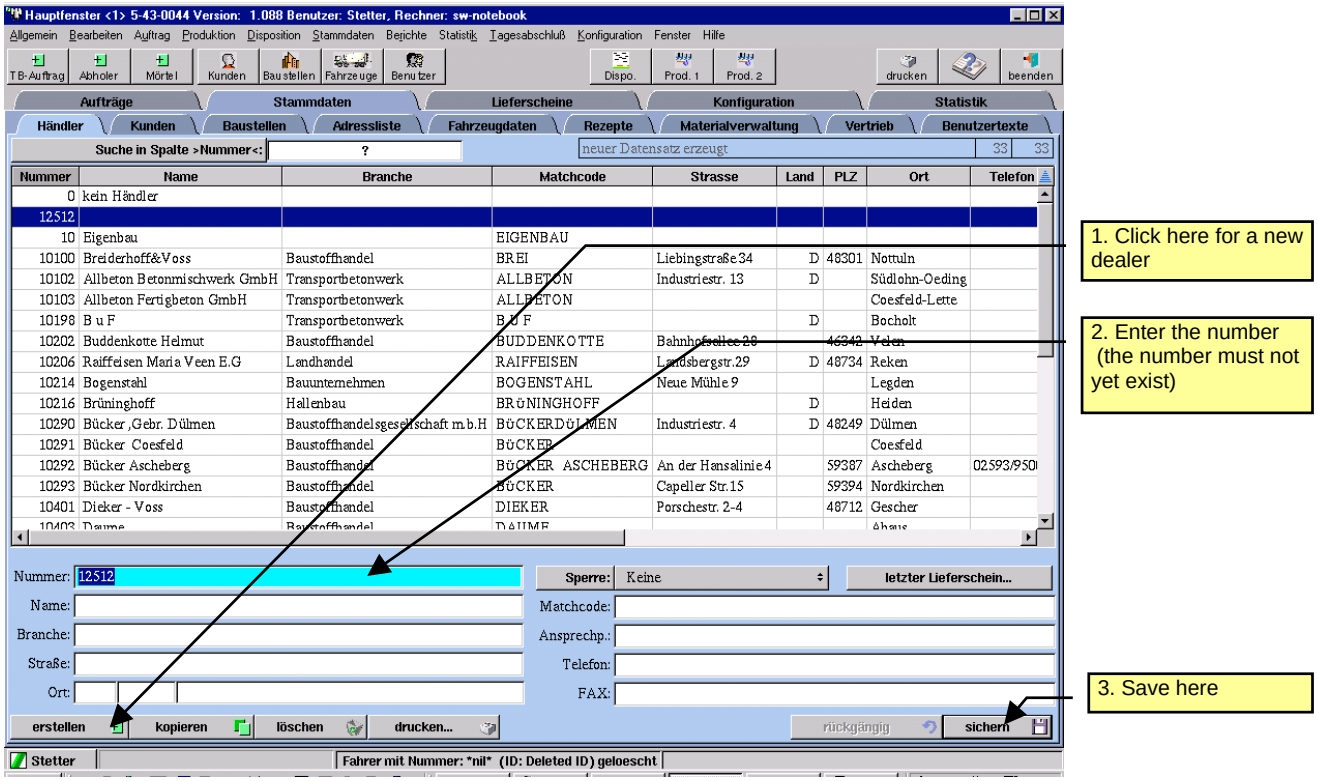


Figure 16-3: Create dealer

How do you create a new dealer?

- Click on the insert button.
- Enter the requested data in the required fields (by double clicking).
- Click on “save”

16.4 Create and change customer

There are 4 possibilities for accessing the customer data.

- Via the menu base data / customer
- With the key combination <Ctrl>+<⇑>+<K>
- Via the base data / customer tab
- Click on the ”customer” button

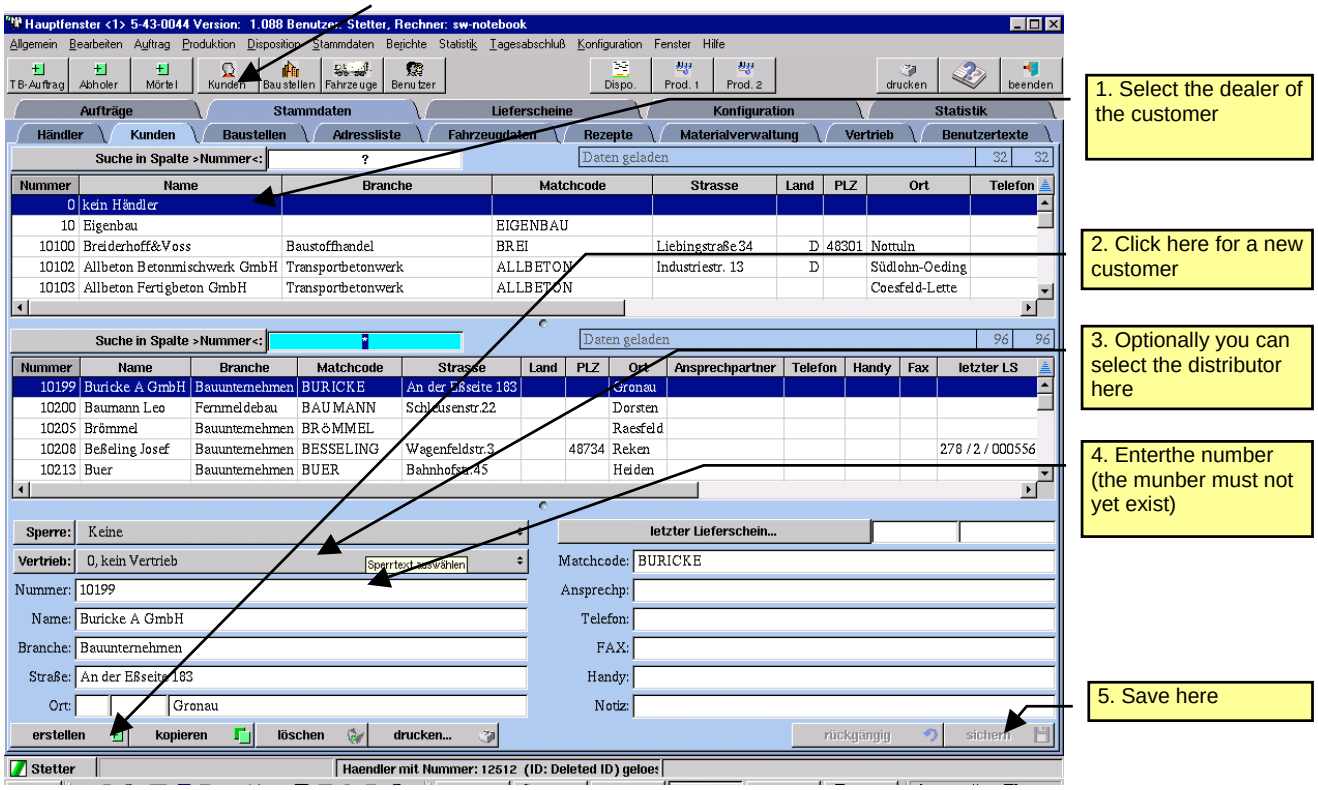


Figure 16-4: Create customer

How do you create a new customer?

- Select the dealer of the customer.
- Click on the insert button.
- Enter the requested data in the required fields (by double clicking).
- Click on “save”

16.5 Create and change job site

There are 4 possible ways of accessing the job site data.

- Via the menu base data / job sites
- With the key combination <Ctrl>+<⇧>+<B>
- Via the base data / job sites tab
- Click on the “job sites” button

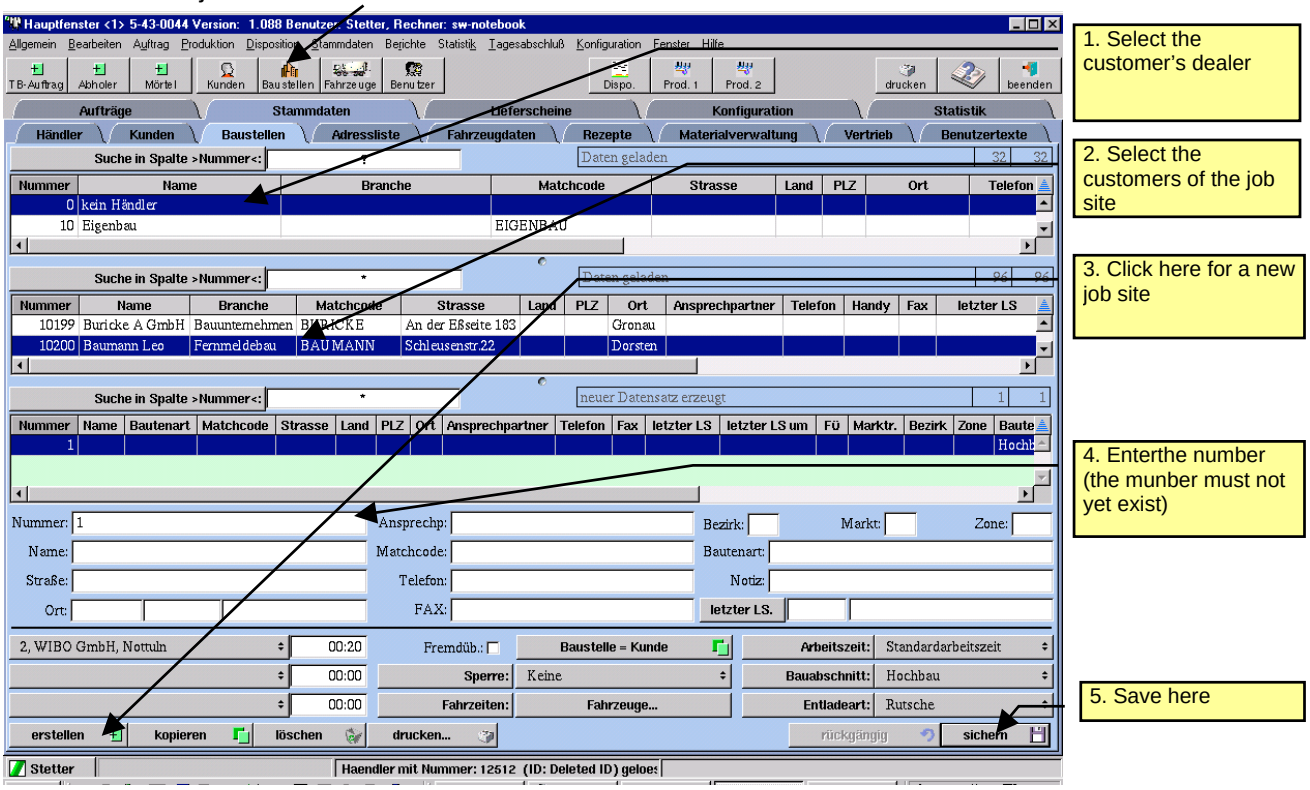


Figure 16-5: Create job site

How do you create a new job site?

- Select the customer’s dealer.
- Select the customer of the job site.
- Click on the insert button.
- Enter the requested data in the required fields (by double clicking).
- Click on “save”
- If the job site address is the same as the customer’s address, click on the field “job site = customer“. The customer data is then accepted.

16.6 Create and change list of materials

There are 3 possible ways of accessing the materials data.

- Via the menu base data / materials
- Via the base data / material management / materials tab
- In the plant schematic, click with the mouse on a weigher symbol right mouse button and “show material data “

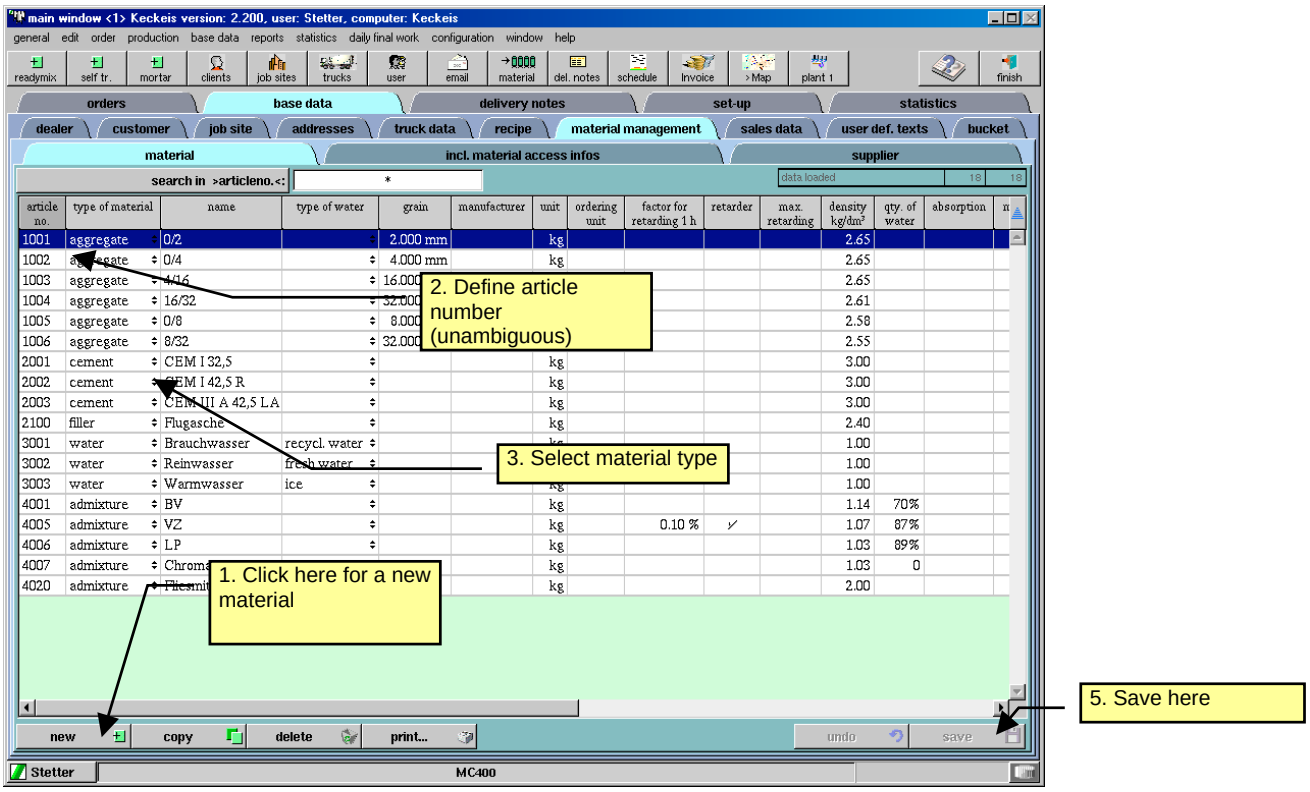


Figure 16-6: Create a material

How do you create a new material?

- Create a new record with “new”.
- Define the article number (this number must be unambiguous).
- Select the material type
- Enter the name
- Enter the grain size for aggregates (in mm)
- Enter the manufacturer (optional).
- In the case of admixtures, enter the conversion factor if a retarder is involved (e.g. 0.1)
- Enter the density
- Save
- The material must then be assigned to a silo.
  (see 16.7 Create and change silos Page 135)

16.7 Create and change silos

There are 3 possible ways of accessing the silo data.

- Via the menu configuration / plants / silos
- Via the configuration / plants / silos tab
- In the plant schematic with the mouse on a weigher symbol, right mouse button and “show silo data“

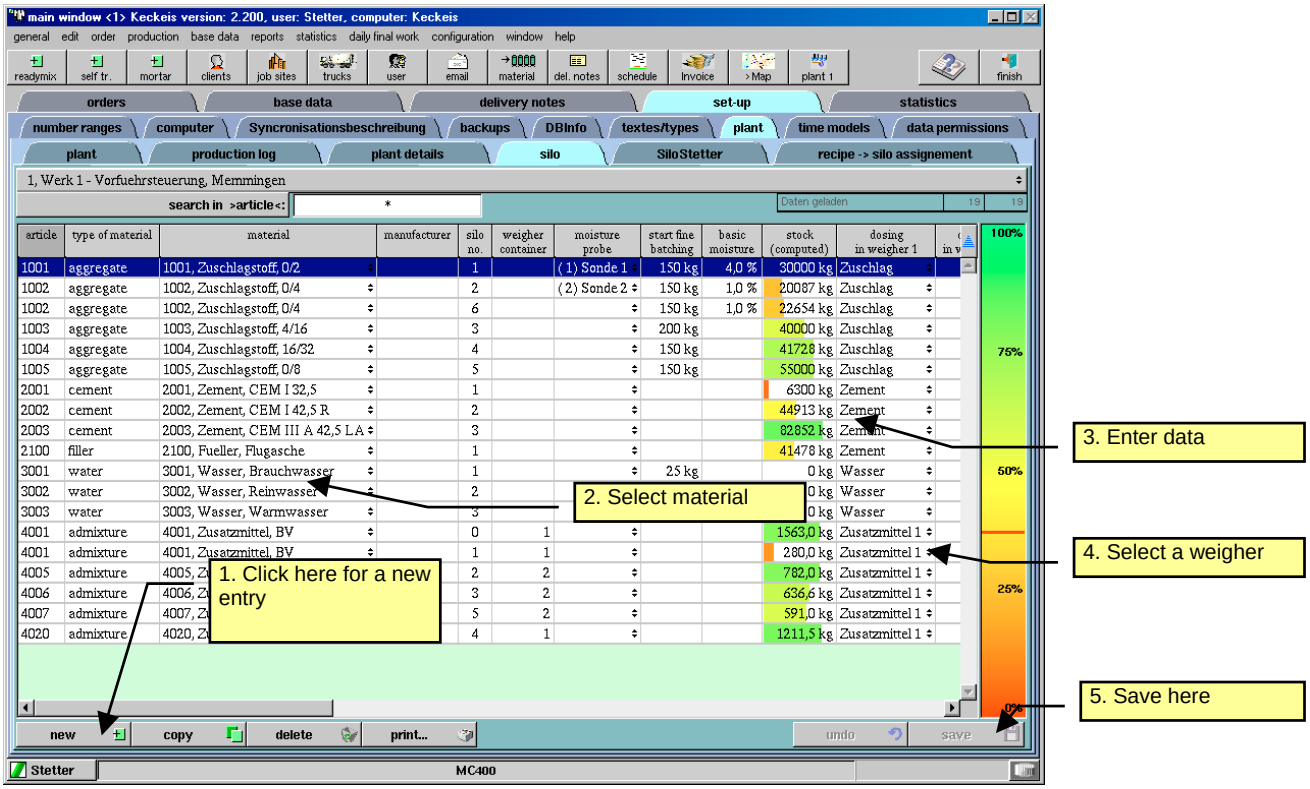


Figure 16-7: Create a material

How do you create a new silo entry?

- Create a new record with “new”.
- Select the material (the fields article, material type, material and manufacturer are automatically entered here)
- Define the silo number (unambiguous within a material type)
- Enter the minimum and maximum stock.
- In the case of admixtures, do not forget the weigher container number. This number is the emptying pump.
- In the case of aggregates, enter the basic moisture.
- In the case of aggregates, state the moisture probe if necessary.
- If necessary, tick the column “correction of qty. of fine particles”.
- Select weigher.
- Save

17 Reports and statistics

17.1 Overview

Subject	Report	Sub-report	Notes
dealer	list	with customers and job sites	
		with finished deliveries	
		with list of customers	
		only the dealer list	
	statistic	dealer list with delivered quantities	
		with finished deliveries	
		only changed delivery notes	
customers	list	with list of job sites	
		with finished deliveries	
		only the list of customers	
	statistic	list of customers with delivered quantities	
		with finished deliveries	
		only changed delivery notes	
	statistic with recipe list	list of customers with delivered quantities	
		with recipe list	
		only changed delivery notes	
job sites	list	list of job sites only	
		with finished deliveries	
	statistic	list of job sites with delivered quantities	
		with finished deliveries	
		only changed delivery notes	
	statistic with recipe list	list of job sites with delivered quantities	
		with recipe list	
		only changed delivery notes	
	missing buckets for mortar	list of job sites only	
		with finished deliveries	
trucks	list	list of trucks only	
		with finished deliveries	
		with planned deliveries	
		only the list of transport subcontractors' trucks	
	statistic	List of trucks with delivered quantities	
		with finished deliveries	
		only changed delivery notes	
	tours		
	types		
driver	list	only the driver list	
transport subcontractor	list	only the transport subcontractors list	
		list of trucks only	
		with finished deliveries	

Subject	Report	Sub-report	Notes
		with planned deliveries	
recipes	detailed		
	list		
	list of produced recipes	(sorted in descending order in acc. with quantity)	
	statistic	list with quantities	
test protocol	recipe test protocols	list	
grade curves	recipe – grade curves		
materials	list of materials		
material deliveries	material deliveries	list	deliveries within a date range
suppliers	list	only the suppliers	
		with material deliveries	
distributor	list	list of distributors only	
		with list of customers	
		with finished deliveries	
	statistic	with finished deliveries	
		only changed delivery notes	
		list of distributors with delivered quantities	
alarm texts	list		
type of building	list		
characteristics	list		
types of unloading	list		
	statistic		
notes	list		
hints for recipe test	list		
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advertising texts	list		
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data saving	list		
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status of testing recipe	list		
plant parameter – units	list		
status texts	list		
order types	list		
batch names	list		
truck types	list		
recipe types	list		
plant parameter - groups	list		
material types	list		
types of traffic	list		
weigher types	list		
possible production error	list		
user	list		
user groups	list		with permissions
	with table of		

Subject	Report	Sub-report	Notes
	permissions		
plant	list of produced recipes		
	configuration etc	plant parameter	
		configuration of plant parameters	
		material stocks	
		material stocks (graphics)	
		material consumption	
		with finished deliveries	
		with planned deliveries	
		list of plants only	
		weigher and mixer parameters	

18 Other

18.1 Database back-up

All data is saved in a database. To prevent data loss due to unforeseeable events, it is recommended to regularly carry out database back-ups. When MC400 is ended, the program checks whether the data in the database has been changed. If so, the user is requested to back-up the data.

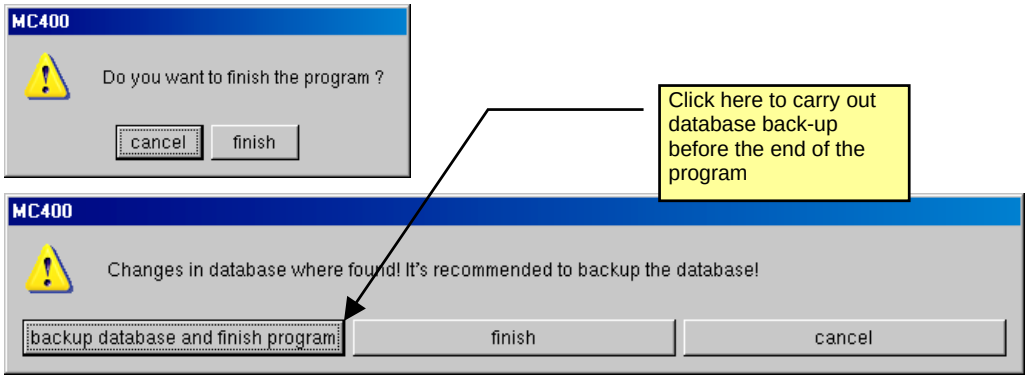

Figure 18-1: Program end and database back-up

For daily database back-ups, the database is copied to a directory. The directory can be changed in the options (menu point: “general->options->directories“). A directory on another Windows network computer is also possible.

A subdirectory called

“MC400 data of dd.mm.yyyy.db“ (dd = day, mm = month, yyyy = year)

is created in the default directory. The database is copied to this directory. After copying, an entry is made in the list “configuration->database back-up“. This entry contains, among other things, the saving path. Older entries should be deleted from time to time in order to free up memory space on the hard disk. When making the database back-up, the complete database is always copied. This means that older databases contain the same data apart from when data has in the meantime been deleted.

The database can only be started from the main computer (mixing computer).

18.1.1 Database back-up onto CD

A CD is burned for the purpose of permanent data back-ups. The CD drive installed in the PC is a CD-writer (apart from in the case of network workstations).

A blank CD is required to write a CD. These blanks are available from any computer store.

Figure 18-2: CD-writer

Insert the blank CD into the drive. The unlabelled side must face down.

When the drive is closed, select the menu item

„general->back-up database to CD/DVD...“.

The CD will be prepared automatically when the drive is closed. When the system is ready writing the database to the CD, the CD will be ejected. Please label the CD and store it to a save place.

18.2 Restoring the database from a back-up

In rare cases, e.g. when protocols or statistics from the previous year must be checked but whose data has since been deleted, it is necessary to copy back a data back-up.

ATTENTION

When copying back, the present database is overwritten. All more recent data is therefore deleted.

The call-up for reading in a backed-up database takes place via the menu point

“general->restoredatabase from back-up…”

The program gives you the possibility of first backing up the present database before the archived database is copied back.

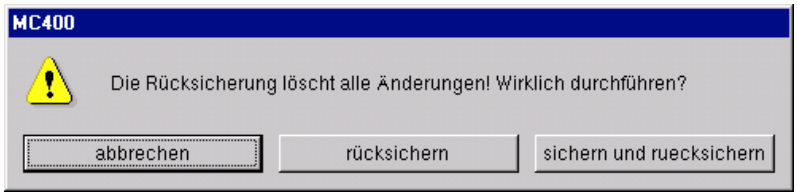

Figure 18-3: Restore database from back-up

In any event, select “save and restore“ here. After the present database has been saved, the dialog for selecting the required database appears again.

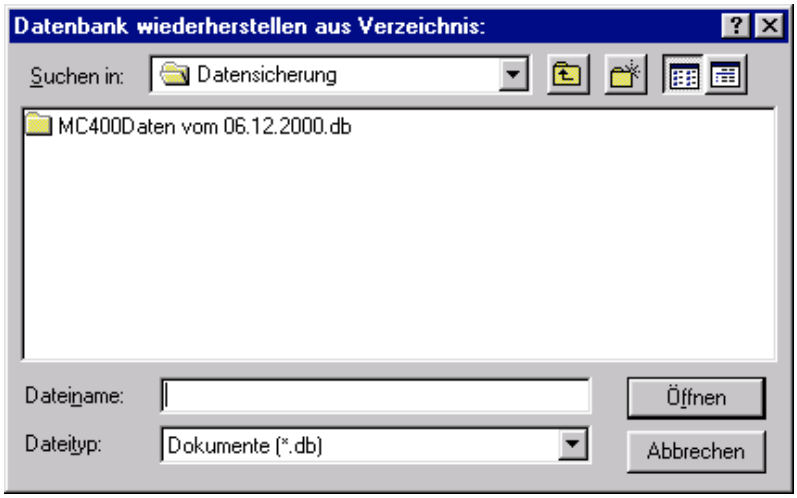

Figure 18-4: Select directory for restoring the data

Select the required directory here and click on “open“.

18.3 Exporting data

Via the menu point: “general->export data“ it is possible to output various data as text files. These files can be very large. The format details can be found *19.2 Record formats on page 146*.

Mark the data that you want to export. A file name is interrogated for each type with the “export” button. The target directory can also be changed here. Change the pre-assignment of the target directory under the menu point “general->options->directories“.

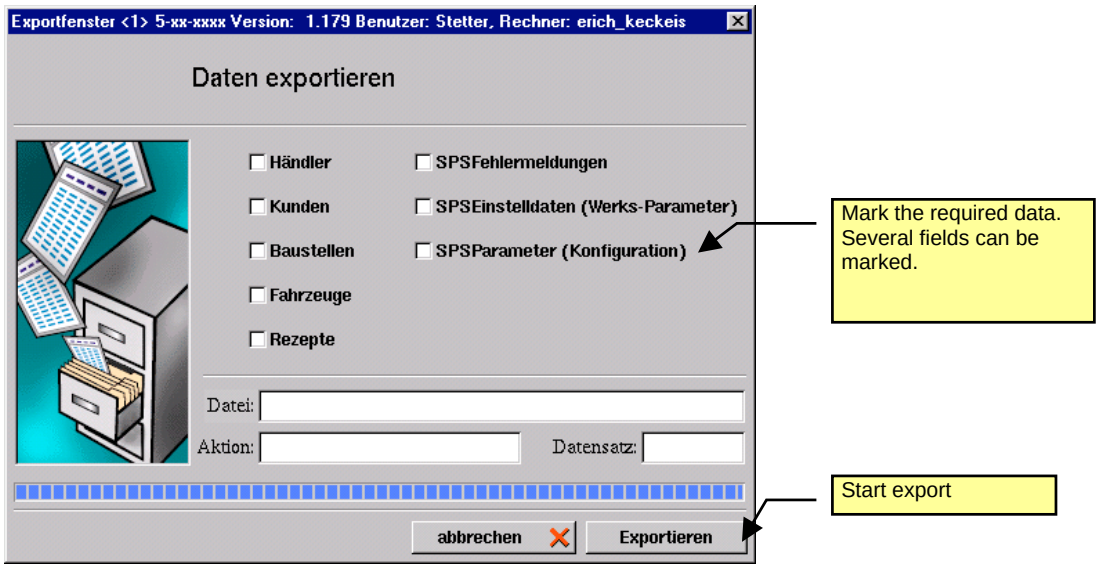

Figure 18-5: Exporting data

18.4 Importing data

Via the menu point: “general->import data“ it is possible to read in various data from a text file. The format details can be found under *19.2 Record formats on page 146*.

Mark the data that you want to import. A file name is interrogated for each type with the “import” button. The source directory can also be changed here. Change the pre-assignment of the source directory under the menu point “general->options->directories“.

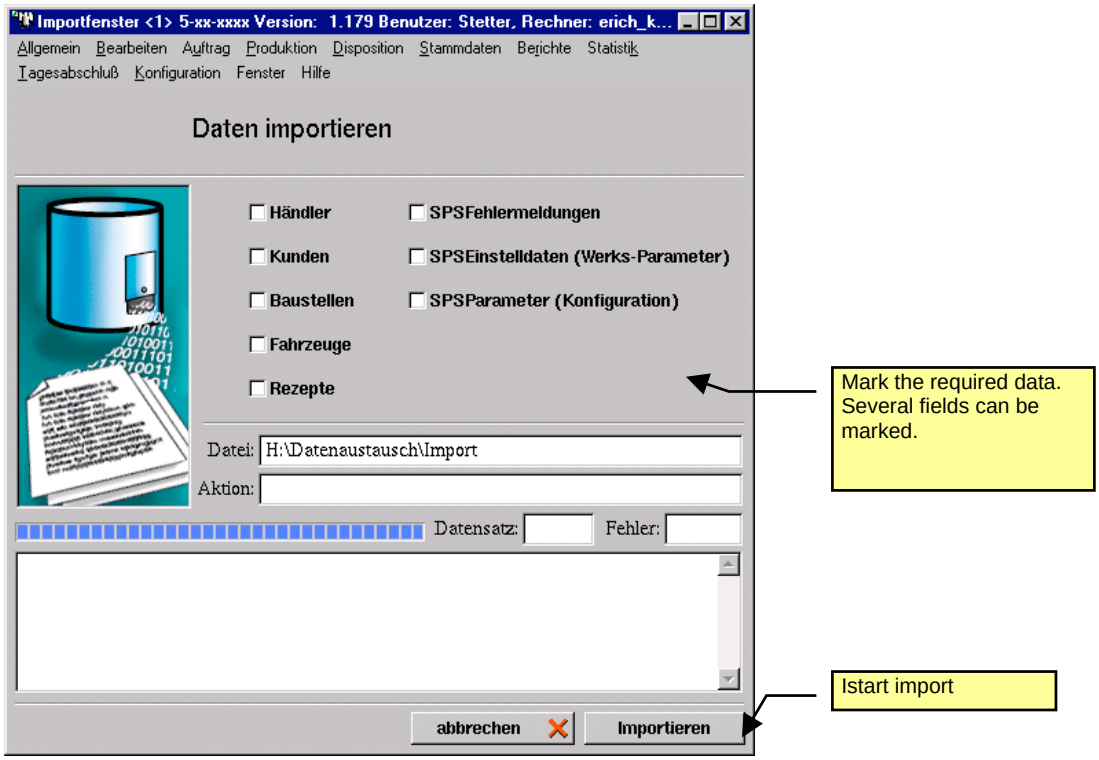

Figure 18-6: Importing data

19 Appendix

19.1 Keyboard assignment

The following keys and key combinations are assigned to special functions:

Key	Function	Condition
F1	Activate Online Help	always active
F2	Start production	when no production is running
F3	Stop production	when production is running
F4	Abort production	when production is stopped
F5	Acknowledge PLC error messages	always active
F6	Release / block mixer outlets 1	when mixer 1 is available and active
F7	Release / block mixer outlets 2 (if present)	when mixer 2 s available and active
F8	Release / block alternate silo outlet (if present)	when alternate silo is available
F9	Display production mask	when no dialog is open
F10	Display order list	when no dialog is open
F11	Display PLC message list	when no dialog is open
F12	Display recipe list	when no dialog is open
Shft+F4	Display Login mask	when no dialog is open
Alt+F4	End application	when no dialog is open
ESC	Close a dialog (Abort) or abort a process that is taking longer. In this case, >ESC< is in the status line on the bottom edge of the program screen.	when a dialog is open or when ESC is displayed in the progress bar.
TAB	Move cursor to the next field	when a dialog is open
Shift+TAB	Move cursor to the previous field	
Ins	Activate and deactivate Insert mode	
Del	• Delete marked characters in an input field • If no character is marked in an input field, the character after the text cursor is deleted. • Delete marked orders in the list of orders	
Pos1	Jump t the starting position (1st record in a list or 1st character in an input field)	
End	Jump to the end position (last record in a list or end of the characters in an input field)	
Undo	Delete character bin front of the text cursor	
Alt+Undo	Undo last entry in an input field	
Alt	Activate menu line. **ATTENTION!** *When the menu line is selected, the other dialog functions are deactivated. Press ESC*	

Key	Function	Condition
	to deactivate the menu line.	
Enter	The button of a dialog with the bold surround is pressed.	

19.2 Record formats

19.2.1 Dealer record

Path (default): D:\DATENAUSTAUSCH\EXPORT\HAENDLER.TXT

Field No..	Description	Length	Type	Note
1	Record type	2	T	20
2	Dealer number	8	N	”01234567”
3	Dealer name	30	T	
4	Dealer sector	30	T	
5	Dealer street	30	T	
6	Dealer type	30	T	
7	Dealer phone	13	N	
8	Embargo	1	N	
9	Administration mark	1	T	L=Delete N=New A=Change K=Complete exchange in 1st record
10	Reserve	53	T	
11	Record end (CR)	1	N	0Ah
12	Record end (LF)	1	N	0Dh
		∑ 200		

Table 19-1: Record format - dealer

Explanation of the type:

N = Numerical

T = Text

19.2.2 Customer record

Path (default): D:\DATENAUSTAUSCH\EXPORT\KUNDEN.TXT

Field No.	Description	Length	Type	Note
1	Record type	2	T	30
2	Dealer number	8	N	”01234567”
3	Customer number, new	8	N	”01234567”
4	Customer number, old	8	N	”01234567”
5	Customer name	30	T	
6	Customer branch	30	T	
7	Customer street	30	T	
8	Customer city	30	T	
9	Customer phone	13	N	
10	Customer embargo mark	1	T	‘-‘embargo, ‘r’ or ‘R’ – consult
11	Administration mark	1	T	L=Delete N=New A=Change K=Complete exchange in 1st record
12	Match code	15	T	
13	Cash payment	1	T	30H = no cash payment 31H = cash payment
14	Reserve	21	T	
15	Record end (CR)	1	N	0Ah
16	Record end (LF)	1	N	0Dh
		∑ 200		

Table 19-2: Record format – Customer

Explanation of the Type:

N = Numerical

T = Text

19.2.3 Job site record

Path (default): D:\DATENAUSTAUSCH\EXPORT\BAUSTELLEN.TXT

Field No.	Description	Length	Type	Note
1	Record type	2	T	40
2	Dealer number	8	N	”01234567”
3	Customer number, new	8	N	”01234567”
4	Customer number, old	8	N	”01234567”
5	Job site number, new	6	N	”012345”
6	Job site number, old	6	N	”012345”
7	Job site name	20	T	
8	Job site street	20	T	
9	Job site city	20	T	
10	External supervision mark	1	T	‘J’, ‘N’
11	Distributor number	6	N	”012345”
12	Zone text	2	T	”ZONE_A_3_STELLIG”- Zone column
13	Load zone	2	N	‘1’ - ‘10’
14	Market area	3	T	”ZONE_A_3_STELLIG”- Zone line
15	Type of building	1	T	
16	Administration mark	1	T	L=Delete N=New A=Change K=Complete exchange in 1st record
17	Reserve	84	T	
18	Record end (CR)	1	N	0Ah
19	Record end (LF)	1	N	0Dh
		∑ 200		

Table 19-3: Record format – job site

Explanation of the type:

N = Numerical

T = Text

19.2.4 Structure of the computer record formats

The computer data is recorded on 3 1/2" 1.44 Mbytes diskettes, MS-DOS format.

A computer record in the following form is recorded of each delivery note. All entries are in ASCII format.

19.2.4.1 Format: Stetter standard record 600 Byte

Field No.	Content	No. of bytes	Type	Structure
20	Record number	2	N	(01)
21	Delivery note number	6	N	
22	Order number	3	N	
23	Loading time	4	N	(hhmm)
24	Date	6	N	(ddmmyy)
25	Plant number	4	N	
26	Dealer number	8	N	
27	Customer number	8	N	
28	Customer name	30	T	
29	Customer branch	30	T	
30	Customer street	30	T	
31	Customer city	30	T	
32	Job site number	6	N	
33	Job site delivery zone	2	N	
34	Truck number	3	N	
35	Truck registration no.	11	T	
36	Driver number	8	N	
37	Business number	8	N	
38	Distributor number	6	N	
39	Market area	3	T	
40	Contact	14	T	
41	Special service 1 number	2	N	
42	Special service 2 number	2	N	
43	Special service 3 number	2	N	
44	Special service 4 number	2	N	
45	Notes… number	2	N	
46	Print weigher values	1	T	
47	Loading quantity	4	N	(nn,nn)
48	Returned concrete quantity	4	N	(nn,nn)
49	Additional / reduced quantity cement 1	4	N	(±nnn)
50	Additional / reduced quantity cement 2	4	N	(±nnn)
51	Additional / reduced quantity filler	4	N	(±nnn)
52	Recipe number	3	N	
53	Recipe code (types of concrete no.)	11	T	
54	Quantity/m^3 aggregate 1	5	N	
55	Quantity/m^3 aggregate 2	5	N	
56	Quantity/m^3 aggregate 3	5	N	
57	Quantity/m^3 aggregate 4	5	N	

Field No.	Content	No. of bytes	Type	Structure
58	Quantity/m^3 aggregate 5	5	N	
59	Quantity/m^3 aggregate 6	5	N	
60	Article number – aggregate 1	4	N	
61	Article number – aggregate 2	4	N	
62	Article number – aggregate 3	4	N	
63	Article number – aggregate 4	4	N	
64	Article number – aggregate 5	4	N	
65	Article number – aggregate 6	4	N	
66	Quantity/m^3 + additional quantity cement 1	5	N	
67	Quantity/m^3 + additional quantity cement 2	5	N	
68	Quantity/m^3 + additional quantity filler	5	N	
69	Article number cement 1	4	N	
70	Article number cement 2	4	N	
71	Article number filler	4	N	
72	Quantity/m^3 admixture I Type 1	5	N	(nnn,nn)
73	Quantity/m^3 admixture I Type 2	5	N	(nnn,nn)
74	Quantity/m^3 admixture II Type 1	5	N	(nnn,nn)
75	Article No. admixture I Type 1	4	N	
76	Article No. admixture I Type 2	4	N	
77	Article No. admixture II Type 1	4	N	
78	Quantity total water/m^3	5	N	(nnn,nn)
79	Waiting time	3	N	(min)
80	Sample cube group	2	N	
81	Delivery note status	1	N	(0=OK 1=changed)
82	livery. number	2	N	
83	Reserves	10	T	(blanks entered)
84	Job site name	20	T	
85	Job site street	20	T	
86	Job site city	20	T	
87	Recipe No. (short code, 4-digit)	4	T	(Extensions for MC200M)
88	Additional / reduced quantity cement 3	4	N	(±nnn)
89	Quantity/m^3 aggregate 7	5	N	
90	Article number – aggregate 7	4	N	
91	Quantity/m^3 + additional quantity cement 3	5	N	
92	Article number cement 3	4	N	
93	Quantity/m^3 admixture I Type 3	5	N	(nnn,nn)
94	Quantity/m^3 admixture II Type 2	5	N	(nnn,nn)
95	Quantity/m^3 admixture II Type 3	5	N	(nnn,nn)
96	Article No. admixture I Type 3	4	N	
97	Article No. admixture II Type 2	4	N	
98	Article No. admixture II Type 3	4	N	
99	Customer	15	T	
100	Special service 1 number	2	N	(nn)
101	Special service 1 quantity	4	N	(nn,nn)
102	Special service 1 unit	3	T	
103	Special service 2 number	2	N	(nn)
104	Special service 2 quantity	4	N	(nn,nn)
105	Special service 2 unit	3	T	
106	Special service 3 number	2	N	(nn)

Field No.	Content	No. of bytes	Type	Structure
107	Special service 3 quantity	4	N	(nn,nn)
108	Special service 3 unit	3	T	
109	Special service 4 number	2	N	(nn)
110	Special service 4 quantity	4	N	(nn,nn)
111	Special service 4 unit	3	T	
112	Date (in long format)	8	N	(ddmmyyyy)
113	Reserve	28	T	(blanks entered)
114	Record end	1	N	(CR)
115	Record end	1	N	(LF)
	Total, 600 Byte	∑ 600		

Table 19-4: Record format - Stetter 600

Explanation of the Type column:

N = Numerical

T = Text

19.3 Overview of the tab menu

Orders	Ready mix concrete		
	Self transporting		
	Mortar		
	Combined mortar orders		
	Planned productions		
Base data	Dealer		
	Customers		
	Job sites		
	Address list		
	Truck data	Trucks	
		Drivers	
		Transport subcontractors	
	Recipes	Description	
		Recipes	
		Mixer data	
		Test protocols	
		Grade curves	
	Material management	Materials	
		Material access	
		Suppliers	
	Distributor		
	User texts	Alarm texts	
		Phases of constr.	
		Characteristics	
		Types of unloading	
		Note	
		Hints for recipe test	
		Embargo texts	
		Advertising texts	
		Special services	
Delivery notes	Ready mix concrete		
	Self transporting		
	Mortar		
	Combined mortar orders		
	All delivery notes		
	Delivery note details	Batches	
		Qty. in batch	
		materials	
		Qty. of materials	
Configuration	Number ranges		
	Computer		
	Data back-up		
	Texts/Type	System texts	delivery note forms
			Table manes
			Status of recipe test
			Parameter – units
		Type texts	Orders
			Batches
			Trucks
			Recipes
			Type of plant parameter
			Materials
			Traffic
			Weighers
		All types of plant parameter	
		Production error	
	Plant	Address	
		Mixer	
		Silos	
		Recipe silo assignment	

		Weighers	
	Time models	Plant parameter	
		Weekly working times	
		Holidays	
	Permissions	Traffic times	
		Users	
		Groups	
		Controls	
Statistic	Delivery note	Group permissions	
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	Orders		
	Dealers		
	Customers		
	Customers / Recipes		
	Truck		
	Recipes		
	Distributors		

20 Critical functions

20.1 Automatic production start

An automatic production start can be activated for test purposes.

Here, continuous operation must be enabled via an options window ->debug. These debug options are accessible only to the user Stetter. After every user has his own password, these options are protected.

ATTENTION

This option is reserved for Stetter GmbH for test purposes. Do not change anything here!

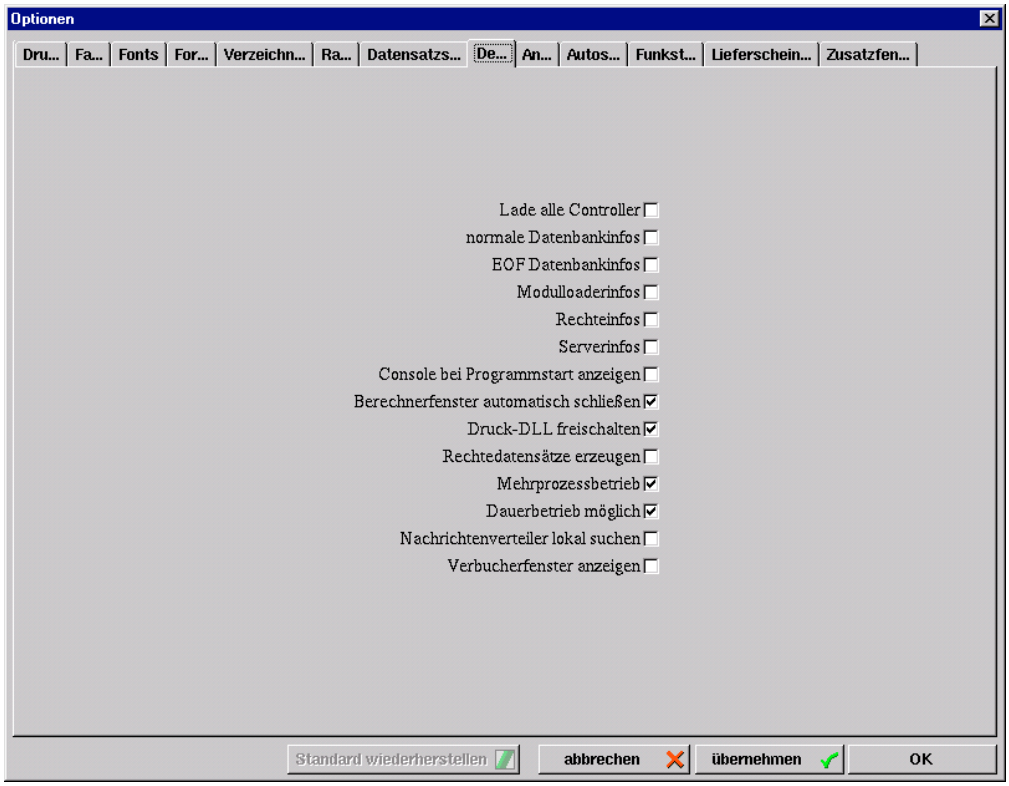

Figure 20-1: Option – Enable continuous operation – FOR TEST PURPOSES ONLY

When continuous operation is enabled, it must be activated in the plant window by a mouse click on the PLC PC symbol.

What happens?

After a randomly selected time, the marked production order is started. All error messages that occur in the PLC are automatically acknowledged. The mixer outlets are automatically released.

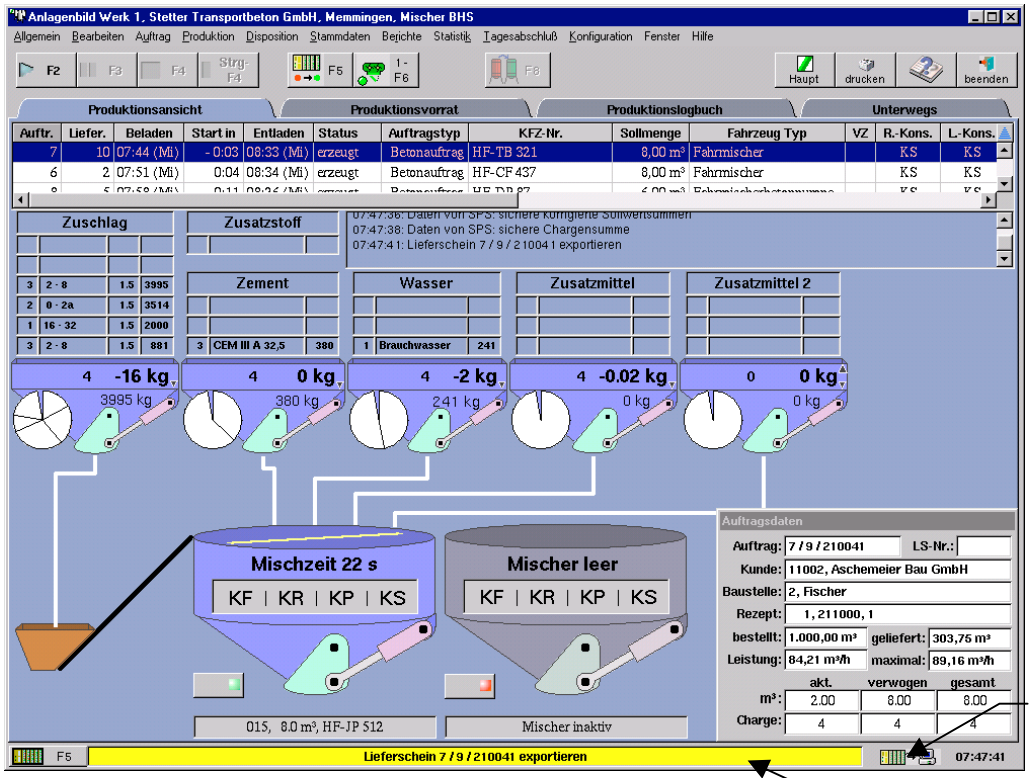

Figure 20-2: Continuous operation for test purposes

How does deactivation take place?

With a mouse click on the PLC PC symbol.

20.2 Production of high-strength concrete

see 9.1.6.9 High strength concrete *Page 70*

The production of high-strength concrete is based on the “DAFsTb Guidelines for High Strength Concrete, a supplement to DIN1024/07.88 for the strength classes B 65 to B 115“.

Attention is drawn here to additional important points.

1. In the case of high strength concrete, the actual value of the micro-silicate is printed on the delivery note instead of the fine material in the recycled water.
2. In the case of high strength concrete, the admixture 3 component 1 is printed on the delivery note instead of admixture 1 component 3. The water content of the admixture for each batch is printed on the protocol.
3. In the case of high strength concrete, the delivery note is automatically printed as the ZTVK delivery note (with weighing data).
4. The concrete group is designated B II when the delivery note is printed out.
5. The delivery note must be checked after every production.
6. Water Stop when dosing into the weigher or when emptying the weigher is not possible.
7. Water correction / manual pre-set is not possible.
8. It is not possible to use recycled water.
9. Residual concrete is not permissible.
10. High strength concrete must have the consistency KF or KR. The slump (42-60cm) and the consistency entry “KF“ or “KR“ are checked when the entry is made (recipe)
11. The water content of the silicate and of the plasticizer used must be stated in the MC400 software. The values are not checked.
12. It is not possible to flush the two admixture weighers with water in automatic operation. In the case of high strength concrete, the lines are flushed with air for each batch.
13. Manual action (manual operation) is not allowed. In particular, the manual dosing of water can render the high strength concrete unusable. There is no electrical interlock, but it can be retrofitted.
14. In plants with 2 mixers, high strength concrete can only be produced with the mixer released for production.
15. Micro-silicate is dosed into the water weigher as the 1st component. If the weighed quantity deviates from the set value, the proportion of water in the micro-silicate is calculated from the difference. The set value for the fresh water is calculated as follows:

    “Actual value micro-silicate + set value fresh water – moisture water +/- proportion of water in the difference micro-silicate “.
16. If the actual value of the water weigher is two gradations in the negative range, the error message “water weigher not zero” appears at the start of dosing. The weigher must then be tared manually. Dosing begins after the error message is acknowledged.
17. If the sand moisture value is greater than the set value of the fresh water after automatic measurement, an error message appears. The water dosing is blocked. Acknowledging the error message enables the fresh water dosing to be released. Alternatively, production must be aborted.
18. The moisture measuring unit must be calibrated with the aid of dried samples. The results of the dried samples must be entered in the materials table as the basic moisture and recorded on a separate protocol.
19. Check: Start moisture measurement at 50 kg and stop moisture measurement at 150 - 180 kg

20. The W/C ratio calculation is performed on the basis of the following formula:

$$\text{W/C ratio} = \frac{\text{qty. fresh water} + (w_s * \text{actual sum silicate}) + \sum (w_z * \text{actual sum admixture}) + \text{moisture}}{\sum \text{cements} + (b_f * m_f) + (b_s * m_s)}$$

whereby:

w_s: Water quantity of the silicate
w_z: Water quantity of the admixture
b_f: Binding factor of the admixture
m_f: Quantity of admixture or max. portion in W/C value referred to the cement quantity
b_s: Binding factor of the silicate
m_s: Quantity of the silicate solid or max. silicate proportion (11%)

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